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**A monograph of the APHODIINI inhabiting the  
United States.**

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In the volume of these Transactions for 1870 and 1871 the first attempt was made at a synopsis of the Aphodiini of our fauna. The material used was derived from the series of Dr. LeConte, whose cabinet was then in my care during his absence in Europe, supplemented by those in my cabinet. The object of the papers above referred to was to bring together in a descriptive catalogue the species then known, with synoptic tables to aid in their determination. The old species were, for the most part, passed with mere mention, the new ones were given brief, but sufficient descriptions. In the meantime no opportunity has been allowed to pass that would add to the value of the series. Since that publication was made a number of the more striking forms were placed in Dr. LeConte's hands and have been described in the "Bulletin of Hayden's Survey" 1878; all of these were Aphodius. Shortly after several *Egialia* and *Rhyssenus* were described elsewhere, as will be seen in the bibliography. A large number, relatively, remain to be described, and as the series before me is as full as can be expected the present opportunity has been taken to give as complete a work as possible. The genera will be considered in the order in which they are usually placed, and should any discussion of the relations of the genera among themselves be deemed necessary, it will be given at the end.

**APHODIUS** Illiger.

At the time of my previous essay on this genus it was supposed that the fauna of our country had been nearly exhausted and that but few new species remained to be discovered. Without any general work the collectors in various parts of the country were unable to separate their species, but it soon became evident that more attention was being given to the collection of the species by the aid given by the synopsis, imperfect as it was. In less than ten years new forms were sent me equalling in numbers those described by me as new. The more conspicuous of these were described by Dr. LeConte as already stated.

In the synopsis of 1870 fifty-one species are given, one other was accidentally omitted. Of these six are now considered synonyms. The present essay enumerates eighty-two, nearly double the number. Of these all are known to me in nature excepting *cadaverinus* and *guttatus*, and seventy-eight are represented in my cabinet. Having thus about as complete a series as usually falls to the lot of any one it has been deemed expedient to review the whole material and bring together fuller descriptions in one paper. As has been my custom for some years the synonymy and bibliography have been placed as a concluding portion and made complete so far as concerns our fauna, the greater part of the synonymy of European species being omitted. In these latter, besides the original citation, I have added references to more modern and better descriptions, to which the student is referred for fuller details of variations than I have thought necessary to give.

The great increase in the number of species has required some modification of the arrangement made use of in my previous papers, although I have endeavored to follow the lines proposed by Erichson as far as our species would permit. It has seemed desirable to adopt a course intermediate between that of Erichson and Mulsant, and to recognize certain primary divisions to be called subgenera, without, however, going to the extreme of the latter author.

In our fauna four subgenera are recognized—*Teuchestes*, *Colobopterus*, *Diapterna* and *Aphodius* (proper), the first two being represented by introduced European species; the third is peculiar to our fauna, and all have the large scutellum. *Aphodius* contains all the species with small scutellum, and has been greatly subdivided, but with our material we must either disregard the names proposed for these divisions or nearly double the number at present existing.

After the scutellum the next most important division is based on the arrangement of the spinules surrounding the apex of the hind tibiæ, whether equal or unequal. A little experience will enable one to determine to which series a species belongs even when the spinules are worn to nearly an equal size. Any synoptic division beyond this point is purely speculative; for, whatever character is used, there will necessarily be an artificial result.

Two characters to which attention is particularly directed by C. G. Thomson (Skand. col. v) have been used in the following pages with good results: (1) whether the anterior face of the front tibiæ is smooth or punctured, and (2) whether the first anterior tarsal joint is of equal or greater length or shorter than the second. The length of the first joint of the hind tarsus has also great value in separating species otherwise closely allied.

The carination of the mesosternum between the coxæ is always a character of moment, although at times it loses importance beyond specific value, as in *lentus*, *explanatus* and *inquinatus*.

The sexual characters of our species seem far more varied than in the European forms. To dwell particularly on these at this time seems unnecessary, as they are fully explained in their proper places, and no special use is made of them in the tables.

In accordance with the views expressed in the preceding remarks it is proposed to divide the genus *Aphodius* into the following subgenera:

Scutellum long, one-fourth or one-fifth the length of the elytral suture.

Hind tibiæ fimbriate with equal spinules.

Scutellum not impressed: first joint of hind tarsus ♂ simple; anterior tibiæ not serrulate above the teeth.....Subgen. TEUCHESTES.

Scutellum longitudinally impressed: first joint of hind tarsus ♂ with recurrent process; anterior tibiæ serrulate above the teeth.

Subgen. DIAPTERNA.

Hind tibiæ fimbriate with unequal spinules: scutellum not impressed: anterior tibiæ feebly serrulate above the teeth; hind tarsi ♂ simple.

Subgen. COLOBOPTERUS.

Scutellum small, not more than one-eighth or one-tenth the length of the suture; hind tarsi ♂ simple: characters otherwise very variable.

Subgen. APHODIUS.

Subgen. TEUCHESTES *Muls.*

Scutellum large, nearly one-fourth the length of the elytra. Anterior tibiæ tridentate, not serrulate above, the anterior face smooth, the tarsus with the first joint shorter than the second. Posterior

tibiae fimbriate with short equal spinules; first joint of hind tarsus a little longer than the three following. Front tuberculate in both sexes.

One species forms this group.

**A. fossor** Linn.—Oblong, very convex, black, shining. Head sparsely punctate, clypeus broadly feebly emarginate, genæ prominent, but obtuse. Antennæ ferruginous, club piceous, palpi piceous. Thorax convex, smooth, a few coarse punctures toward the sides and near the front angles; sides arcuate, sinuate in front of the hind angles, base subtruncate, a deeply impressed marginal line. Elytra strongly convex, a little longer than wide, striate, striæ moderately closely punctured, intervals slightly convex, smooth. Mesosternum not carinate. Metasternum moderately closely punctate at the sides, abdomen obsolete punctate. Posterior femora sparsely punctate and with an irregular row of coarse punctures. Length .40-.44 inch; 10-11 mm.

*Male*.—Head trituberculate, the middle tubercle more prominent. Thorax with a slight depression in front. Anterior tibial spur stout, broader to tip and obtuse. Metasternum deeply impressed.

*Female*.—Head feebly trituberculate. Thorax not impressed in front. Anterior tibial spur more slender toward the tip and acute. Metasternum less concave.

A variety (*sylvaticus*) occurs in Europe in which the elytra are red.

This species has been introduced from Europe into the New England States and Canada, but seems not to have become very abundant.

#### Subgen. DIAPTERNA *Horn*.

Scutellum large, more than a fourth the length of the suture. Anterior tibiae normally tridentate, not serrulate above, the anterior face smooth; first joint of the tarsus shorter than the second. Posterior tibiae fimbriate at apex with unequal spinules; the first joint of the tarsus nearly as long as the next three. Front not tuberculate in either sex.

The characters of this group are as well marked as those to which generic names have been given in the Mulsant system of division. It seems to be peculiar to our fauna.

Since my previous study of the species of this group (Trans. Am. Ent. Soc. 1870, p. 111) Baron Harold has received sufficient material to warrant the expression of opinion that the six species there indicated constitute but one. In a letter to him anterior to his publication (Berl. Zeitschr. 1874, p. 182) I assented to his view, except as to *occidentalis*. A further study, however, has modified my opinion, which may be expressed in the following table:

Thorax wider in front and broader than the elytra; first joint of posterior tarsus

♂ longer than the next three joints, the hook large.....**validus**.

Thorax not wider in front and not wider than the elytra; first joint of hind

tarsus ♂ shorter than the next three, the hook rather feeble....**hamatus**.

The characters on which the other species were separated were the apparently more truncate elytra, the basal marginal line of the thorax, and the deeper or fainter striae. I am now convinced that these must be entirely disregarded, as there is not that constancy making them worthy of consideration. It is also possible that the characters used for the separation of *validus* may fail.

**A. validus** Horn.—Form robust, convex, piceous or black, shining. Head very sparsely finely punctate. Clypeus almost semicircular, feebly truncate at middle, the genæ moderately prominent, but obtuse. Antennæ ferruginous. Thorax very convex, broader than the elytra, widest near the middle, sides arcuate, narrowed at base, basal marginal line distinct, disc smooth, very sparsely, minutely punctate with coarser punctures toward the sides and at the hind angles, the latter distinct, but obtuse. Elytra narrower than the thorax, very little longer than wide conjointly, striate, the striae not closely punctured, intervals flat or slightly convex, with extremely minute punctures sparsely placed. Mesosternum not carinate. Metasternum coarsely punctured at the sides. Abdomen sparsely punctate. Posterior femora coarsely and irregularly punctate. Length .32 inch; 8 mm.

*Male*.—Anterior tibial spur spatulate, broader toward the tip and curved inwardly. Upper spur of middle tibia less than half the length of the lower. Posterior tarsi with the first joint a little longer than the next three together and with an acute recurrent process, forming with the joint the letter V.

*Female*.—Unknown.

The facies of this species is more robust, the elytra shorter and more arcuate on the sides, the legs are also shorter, and the hind tibiae, especially, thicker than in the following species.

Three specimens collected at Abitibi House in the Hudson's Bay Territory.

**A. hamatus** Say.—Form oblong-oval, moderately robust, piceous or black, the elytra varying to brown, and often with a paler suture and margin. Antennæ ferruginous, club darker. Clypeus with oblique sides, in front truncate and vaguely emarginate. Head almost entirely smooth or with extremely few very fine punctures. Genæ moderately prominent, but obtuse. Thorax convex, not wider than the elytra, surface with a few fine punctures sparsely placed, often entirely obsolete, toward the sides a few very coarse punctures; sides arcuate, when viewed from above they are parallel at basal half, basal marginal line variable, rarely entire, usually more or less interrupted, and very rarely entirely absent. Elytra longer than wide conjointly, sides usually parallel at middle, striate, the striae not closely punctured, intervals flat or slightly convex, and usually with a few extremely fine punctures. Mesosternum not carinate. Metasternum coarsely obsolete punctured at the sides. Abdomen sparsely punctate. Posterior femora sparsely, irregularly punctate. Length .24-.40 inch; 6-10 mm.

*Male*.—Anterior and middle tibial spurs as in *validus*. First joint of hind tarsus shorter than the next three, the recurrent process slender, very acute and forming a wider angle.

*Female*.—Anterior tibial spur slender and acute at tip. Upper middle tibial spur longer than half the lower. First joint of hind tarsus slender, rarely as long, never longer than the next three together.

This species varies in the color of the elytra, usually they are piceous, but may vary to brown, while many from Utah and Oregon have the base, suture and side margin much paler.

In many specimens, especially females, the elytra are apparently truncate at apex, allowing the pygidium to be exposed, but this is so variable in appearance, as has been observed in *erraticus*, that no part can be drawn from it.

Occurs from Maine to Oregon, in the region north and a little south of the great lakes and in the mountain region extending south to New Mexico and northward to Hudson's Bay.

Subgen. COLOBOPTERUS *Muls.*

Scutellum elongate, one-fifth the length of the suture. Anterior tibiæ tridentate, not serrulate above, the anterior face smooth, the tarsus with the first joint shorter than the second. Posterior tibiæ fimbriate at tip with unequal spinules. Front tuberculate at middle in the male.

One species represents this group in our fauna.

**A. erraticus** Linn.—Subdepressed, black, elytra greyish yellow with the suture darker. Head rather densely punctate, the clypeus feebly emarginate, the genæ rounded, not prominent; antennæ piceous. Thorax moderately closely punctate, the hind angles obtuse, the base sinuate in front of the humeri, basal marginal line entire. Elytra scarcely longer than wide conjointly, striate, striae finely punctured, intervals very slightly convex, finely alutaceous, finely not densely punctate, apex subtruncate. Body beneath sparsely punctate at middle, more coarsely at the sides. Posterior femora sparsely punctate; first joint of hind tarsus as long as the three following. Length .30 inch; 7.5 mm.

The only sexual distinction observed is the small, but very evident tubercle of the front of the male, the head of the female being entirely plain.

This species has been introduced from Europe, doubtless through commerce, into the Middle States. Many years ago Melsheimer described a specimen under the name *penssallensis*, but whether from a specimen actually native or an accidental cabinet specimen is not known. It has, however, been taken in numbers by Mr. Otto Lugger near Baltimore. It is widely distributed in Europe.

Subgen. *APHODIUS* *Auct.*

Scutellum small, not more than an eighth or a tenth the length of the elytral suture.

This character is about the only one which can be used to distinguish the mass of species which follows from the comparatively few which precede. Various attempts have been made to divide the series, and about a dozen names have been proposed by Mulsant and Motschulsky for sections of variable extent, but the characters have been found to possess very little value and to have such a shadowy foundation that most recent authors have abandoned them entirely. They are, however, divisible by characters sometimes very sharply defined and nearly as often evanescent, into groups which vary in the number of species they contain. The greatest difficulty is in determining to what extent division should be carried.

As subdivision by synoptic tables is intended to assist in the determination of species and not to enable the author to illustrate his ideas of the intricate relationships of the groups or species among themselves, the simpler and shorter the primary tables are made the more nearly do they serve the purpose of their publication. It has seemed to me at all times better to discuss synthetic matters entirely apart from the tables. The object should be to enable the student-reader to determine the species with all possible facility and accuracy, this accomplished he will be enabled to follow intelligently any discussion. Progress in Natural History necessarily starts from a basis of species, and until these are accurately described so that others can arrive at a knowledge of them no great advance is possible.

In the endeavor to subdivide *Aphodius* proper I have followed the plan of Erichson (*Insect. Deutschl.* vol. iii) with modifications to suit the evidently more heterogeneous material of our fauna. The suggestion of groups for species which have no equivalents in the European fauna is necessary, and will be understood, but among the species fimbriate with unequal spinules I have been compelled to ignore one of Erichson's main subdivisions based on the tuberculate or simple head, from the fact that among our species the character is evanescent.

There are other difficulties with this method of subdivision, as there will be with any that can be proposed, which will be alluded to in their proper places.

The following table gives the subdivisions called groups, which I had hoped to name from some characteristic species in place of letter, but this proved to be inadmissible :

- Apex of hind tibiæ fimbriate with short equal spinules.  
 Head more or less tuberculate.  
 Thorax with distinct basal marginal line.  
 Clypeus quadriangulate or quadridenticulate.....GROUP **A**.  
 Clypeus emarginate, sometimes feebly biangulate.  
 Mesosternum not carinate between the coxæ.....GROUP **B**.  
 Mesosternum distinctly carinate.....GROUP **C**.  
 Thorax without trace of basal marginal line.....GROUP **D**.  
 Head not at all tuberculate.  
 Mesosternum not carinate; thorax not narrowed at base.  
 Head coarsely roughly punctured; clypeus dentate each side of emargination and more externally angulate..... GROUP **E**.  
 Head evenly convex and punctate; clypeus feebly emarginate....GROUP **F**.  
 Mesosternum carinate between the coxæ; thorax narrower at base.  
 GROUP **G**.
- Apex of hind tibiæ fimbriate with unequal spinules.  
 Elytra opaque, usually black, often strigose or granulate.....GROUP **H**.  
 Elytra more or less shining.  
 Thorax not narrower at base than apex.  
 Elytra not pubescent.  
 Head tuberculate or not, never very roughly punctured, and without transverse clypeal ridge.....GROUP **I**.  
 Head very roughly punctate, without frontal tubercles, clypeus with a transverse ridge.....GROUP **K**.  
 Elytra more or less pubescent.....GROUP **L**.  
 Thorax narrower at base than apex; humeri of elytra dentiform.  
 GROUP **M**.

GROUP **A**.

Scutellum small. Posterior tibiæ fimbriate with equal spinules at tip. Anterior tibiæ tridentate, serrulate or crenulate above, the anterior face smooth. First joint of anterior tarsi shorter than the second. First joint of hind tarsi variable. Head more or less tuberculate, the clypeus quadridentate in front. Mesosternum not carinate. Thorax with entire basal marginal line.

Two species enter this group and are thus distinguished :

Entire margin fimbriate, the posterior tibiæ fimbriate internally with long hairs. Anterior tibiæ coarsely serrate in the upper half. First joint of hind tarsus not longer than the next two. Color uniformly piceous....**denticulatus**.

Margin not fimbriate, posterior tibiæ not fimbriate. Anterior tibiæ feebly serrulate above. First joint of hind tarsus as long as the next three. Color black, elytra often maculate with pale round spots on intervals 3-5-7.

**conspersus**.



**A. denticulatus** Hald.—Oblong, slightly broader posteriorly, piceous, shining; suture, epipleural margin, under side and legs brownish, the entire margin fimbriate with yellowish hairs. Antennæ pale ferruginous. Head rather coarsely and moderately densely punctured ♀ or smoother ♂, frontal suture elevated, but not divided in tubercles, a transverse carina at middle of clypeus. Clypeus broadly triangularly emarginate, on each side acutely toothed and more externally a less prominent angulation, sides of clypeus oblique, genæ moderately prominent but obtuse. Thorax narrower than the elytra, slightly narrowed in front, sides (viewed from above) feebly arcuate, hind angles broadly rounded, surface sparsely punctured, the punctures equally disposed composed of coarse and fine intermixed. Elytra a little wider behind the middle, striate, striæ not closely punctured, intervals slightly convex, with very few extremely fine punctures. Body beneath piceous, abdomen always paler; metathorax and abdomen sparsely punctate and with few yellowish hairs. Posterior femora smooth, with an irregular row of punctures near the posterior border externally. Length .22-.30 inch; 5.5-7.5 mm.

*Male*.—Head less punctured, elevations more distinct. Anterior tibial spur stouter. Upper spur of middle tibia less than one-third the length of the lower.

*Female*.—Head more closely punctured, elevations feeble. Anterior tibial spur slender. Upper spur of middle tibia half as long as the lower.

This species is notable in the form of the clypeus and the fimbriate margin. The hind tibiæ are conspicuously fimbriate within, the hairs longer and more numerous in the male.

Occurs in the Rocky Mountain region from Wyoming to New Mexico.

**A. conspersus** n. sp.—Form oblong, parallel, black, shining, alternate intervals of elytra with small round pale spots. Antennæ piceous. Head densely, roughly punctured, frontal suture slightly elevated and tuberculate at middle ♂, or with obsolete tubercle only ♀. Clypeus with a short transverse carina, the anterior border emarginate at middle and on each side bidentate, teeth acute, the middle ones a little longer, sides of clypeus arcuate, genæ slightly prominent and very obtuse. Thorax as wide as the elytra, slightly narrowed in front, sides feebly arcuate, hind angles distinct but obtuse, disc convex, sparsely but very regularly punctate at middle, a little denser at the sides, punctures rather fine. Elytra moderately deeply striate, striæ closely punctured, intervals slightly convex, sparsely punctate. Body beneath black, very sparsely punctate. Hind femora sparsely punctate, without row of punctures. Length .18-.20 inch; 4.5-5 mm.

*Male*.—Anterior tibial spur long, moderately stout, slightly hooked at tip. Upper spur of middle tibiæ short.

*Female*.—Anterior tibial spur slender and acute at tip. Upper spur of middle tibia half as long as the lower.

In the color of the elytra this species varies in a manner similar to *bicolor*, the spots being rarely very well marked while it is still rarer to find the elytra entirely black.

Occurs in California, Mendocino Co.

## GROUP B.

Scutellum small. Front distinctly trituberculate, clypeus in several species with a transverse ridge. Anterior tibiæ distinctly tridentate, feebly crenulate above, the first joint of the tarsus shorter than the second. Hind tibiæ fimbriate with short equal spinules, the first joint of the tarsus variable in length. Mesosternum not carinate.

The species of this group although not numerous are of difficult study. The group is not very homogeneous, and the species are aggregated from the possession of certain striking characters above noted.

The following table will assist in distinguishing the species :

- Clypeus emarginate, the angles on each side acute, almost dentiform.  
 Small species, totally black, first joint of hind tarsus not as long as next three. **crassulus.**  
 Large species, elytra clear red, first joint of hind tarsus as long as next three. **bidens.**
- Clypeus feebly emarginate, the angles on each side rounded or at most obtusely prominent.  
 Thorax dissimilar in the sexes, compressed in front in the male; elytra clear red.....**finetarius.**  
 Thorax similar in the sexes, elytra piceous or dull red.  
 Anterior angles of thorax paler, usually with a conspicuous yellow spot, sometimes barely perceptibly paler.  
 Clypeus without trace of transverse carina.  
 Clypeus on each side of emargination rounded in both sexes; striæ of elytra not deeply impressed, intervals very flat....**congregatus.**  
 Clypeus on each side subangulate, more so in ♀; striæ of elytra deep, crenately punctate, intervals convex.....**aleutus.**  
 Clypeus subangulate; striæ of elytra fine, intervals flat; elytra uniformly reddish brown.....**fetidus.**  
 Clypeus with distinct transverse carina.  
 Elytra deeply striate, crenately punctate, intervals convex....**duplex.**  
 Species totally black, anterior angles of thorax never paler.  
 Clypeus with transverse carina; elytra finely alutaceous, subopaque. **pectoralis.**  
 Clypeus without transverse ridge.  
 Small species (.18-.22 inch) facies robust.....**ruricola.**  
 Large species (.28-.30 inch) oblong. ....**anthracinus.**

**A. crassulus** Horn.—Form short, robust, broader behind, black, shining, legs rufo-piceous. Antennæ reddish brown. Head coarsely punctured, sparsely on the vertex, more densely in front. Clypeus emarginate at middle and on each sharply angulate or dentate, the sides arcuate, genæ slightly prominent, but obtuse. Thorax slightly narrower in front, sides feebly arcuate, hind angles very obtuse, disc convex, the punctures rather coarse, very regularly distributed, not closely placed. Elytra slightly wider behind the middle, humeri obtuse, disc

striate, striae crenately punctured, intervals flat, with extremely fine sparsely placed punctures. Body beneath very sparsely punctate; posterior femora sparsely punctate, with a series of three or four punctures near the knee. First joint of hind tarsus as long as the next two. Length .18-.20 inch; 4.5-5 mm.

In the male the spur of the anterior tibiae is stouter and more curved and the posterior femora have more numerous punctures.

This species is notable by its short robust form resembling some of our species of *Aegialia*.

Occurs from Florida to Texas.

**A. bidens** Lec.—Oblong oval, convex, black, shining, elytra and legs red, these paler, anterior angles of thorax paler. Antennae ferruginous. Head sparsely, rather finely punctate. Clypeus hemihexagonal, broadly emarginate in front and on each side sharply angulate, genae prominent, but obtuse. Thorax convex, black, shining, the anterior angles paler, sides parallel posteriorly, arcuate in front, hind angles very obtusely rounded, base slightly sinuate on each side. Disc sparsely rather finely punctate, the punctures equally disposed, but somewhat unequal in size. Elytra slightly narrower at base than the thorax, the humeri distinct, but obtuse, disc striate, the punctures rather fine and not serrate, intervals slightly convex, with very fine sparse punctures. Body beneath very sparsely punctate; hind femora sparsely punctate. First joint of posterior tarsus as long as the next three. Length .26-.28 inch; 6.5-7 mm.

The two specimens before me are probably females, and show no sexual differences.

At first glance this species so closely resembles *finetarius* in form and color that these two might be readily confused.

Occurs in Colorado. The type in my cabinet has no special locality, a second from Mr. E. A. Schwarz was collected at Veta Pass at an elevation of more than 9000 feet.

**A. finetarius** Linn.—Oblong oval, very convex, black, shining, elytra uniformly red. Antennae ferruginous. Head sparsely, rather finely punctulate, somewhat rugulose in front, vertex trituberculate, the middle tubercle stronger. Clypeus hemihexagonal with a feebly elevated transverse carina, angles broadly rounded, at middle broadly but feebly emarginate, the sides oblique, slightly sinuate, genae feebly prominent and very obtuse. Thorax transverse and very convex, black, shining, the front angles with large reddish yellow space, surface with coarse, very irregularly placed punctures with finer punctures in the intervals, sides arcuate, hind angles broadly rounded, base slightly sinuate each side. Elytra as wide as the thorax, the humeri obtuse, disc striate, striae crenately punctured, the intervals slightly convex with few fine punctures. Body beneath sparsely punctate, densely at the sides of metasternum. Legs dark reddish brown, tarsi paler. Posterior femora sparsely punctate, a row of coarser punctures near the knee. First joint of hind tarsus equal to the next three. Length .26-.34 inch; 6.5-8.5 mm.

*Male*.—Frontal tubercles more developed, the intermediate subcornute. Thorax more convex, impressed in front. Anterior tibial spur stout and curved, upper spur of middle tibia less than half the length of the lower and stout.

*Female*.—Frontal tubercles less prominent. Thorax smaller, less convex, not impressed in front. Spur of anterior tibia slender, less curved, the upper spur of middle tibia at least half the length of the lower.

Among the specimens collected in our fauna I have observed very little variation, but Harold (Berl. Zeitsch. 1863, 338) notes a form with the thorax entirely black.

This species has been introduced from Europe, and is quite common in the Atlantic region. It extends from Canada to Texas, and from Maine to Illinois. It will probably invade every portion of our territory.

**A. congregatus** Mann.—Oblong, moderately convex, slightly broader behind ♀, piceous, shining, anterior angles of thorax pale, legs rufo-testaceous, elytra variable in color, from rufo-testaceous with indistinct cloudings to nearly piceous with the apices only paler. Antennæ rufo-testaceous with darker club. Head sparsely punctate, in front slightly rougher, front feebly trituberculate. Clypeus hemihexagonal, apex truncate and feebly emarginate, the angles broadly rounded, sides oblique, genæ feebly obtusely prominent. Thorax narrowed in front, sides feebly arcuate, hind angles distinct, but very obtuse, disc rather sparsely punctured with intermixed punctures denser near the sides. Elytra not wider than the thorax, finely striate, striæ not closely punctured, intervals very flat with extremely fine punctures. Body beneath sparsely indistinctly punctured, the abdomen distinctly alutaceous. Posterior femora with extremely few, very fine punctures, first joint of hind tarsus very little longer than the next two. Length .18–.22 inch: 4.5–5.5 mm.

The males are usually smaller than the females, the form more parallel, the frontal tubercles very little more prominent, and the spur of the front tibia a little thicker.

The color of the elytra varies considerably in this species. The ground color is dark rufo-testaceous, with indistinct cloudings of darker color. The dark spaces are very indistinctly limited, but when studied carefully seem to be of the same type in form and arrangement as in *inquinatus*. From rufo-testaceous the elytra become gradually darker, so that merely the apices are indistinctly paler.

With this species I have no hesitation in uniting *arcticus* Harold, as it seems to be merely the darker form described above.

Occurs from Northern California to Alaska.

**A. aleutus** Esch.—Oblong, moderately elongate, piceous, shining, elytra variable in color from dark red to black, sometimes with traces of a design, legs rufo-piceous. Antennæ rufous, club piceous. Head sparsely punctate, in front subrugose; front trituberculate. Clypeus hemihexagonal, anteriorly truncate and emarginate, more deeply in the ♀, the angles very distinct, but obtuse; genæ moderately prominent, but obtuse. Thorax narrower in front, the sides arcuate, hind angles distinct, obtuse, disc moderately convex, surface punctate

with coarser and finer punctures intermixed, slightly denser at the sides, anterior angles of thorax usually with a large pale space, rarely the spot is obsolete. Elytra moderately deeply striate, the striæ closely, but not deeply punctured, intervals convex, but to a variable degree, the finer punctures scarcely perceptible. Body beneath very sparsely punctate, the mesosternum almost absolutely smooth. Posterior femora almost smooth, first joint of hind tarsus nearly as long as the next three. Length .20-.26 inch; 5-6.5 mm.

The sexual differences are scarcely evident beyond the slightly deeper clypeal emargination of the female and the more robust anterior tibial spur of the male.

This species and *congregatus* are closely related and difficult to distinguish by the table or description, but in the present species the striæ of the elytra are always deeper and more distinctly punctured, and the intervals convex, while in *congregatus* they are absolutely flat.

The variation in color is well marked. In the typical form the elytra are dark red and the anterior angles of the thorax with a well marked pale spot. I have specimens in which the elytra are somewhat maculate, and the design, carefully studied, is of the same type as in *pardalis*. Specimens are, however, abundant (three from Colorado) in which the entire surface is quite black, and even the pale spot at the anterior angles of the thorax almost or even entirely disappeared. These latter are *ursinus* Motsch. These resemble *pectoralis*, which has the elytra, however, distinctly alutaceous, and the clypeus with a distinct transverse carina.

Occurs from the high regions of Colorado westward to California, Oregon, Washington Territory, and northward to Alaska. The variety *ursinus* occurs also in Kamtschatka.

**A. foetidus** Fab.—Oblong oval, slightly broader behind, black, shining, elytra and legs brownish red. Antennæ reddish brown with darker club. Head distinctly alutaceous, sparsely punctate, the frontal tubercles feeble. Clypeus hemihexagonal, feebly emarginate at middle, the angles rounded, the genæ feebly prominent. Thorax narrower in front, the sides feebly arcuate, base regularly arcuate, hind angles distinct, but obtuse, disc convex, black, the anterior angles always paler, surface moderately coarsely, but very evenly punctate, more densely in the female. Elytra not as wide as the thorax ♂ or equal ♀, the disc striate, striæ crenately punctured, intervals slightly convex, distinctly alutaceous and with fine irregularly placed punctures. Body beneath sparsely punctate, the surface distinctly alutaceous. Posterior femora sparsely punctate, the first joint of the hind tarsi as long as the next three. Length .16-.20 inch; 4-5 mm.

The sexual differences are very feeble. As a rule the male is smaller and less broadened behind, the clypeus and thorax less closely punctured. The thorax is also distinctly broader in the male, so that the base of the elytra seems narrower than it.

The surface being very finely alutaceous, the specimens have at all times a greasy aspect.

This species has probably been introduced from Europe, but is so widely diffused in our territories, occurring from the Atlantic coast to Colorado and New Mexico.

**A. duplex** Lec.—Oblong, subcylindrical, piceous or brownish, the anterior angles of the thorax paler, legs reddish brown. Antennæ brownish, the club piceous. Head sparsely rather coarsely punctate, the clypeus more rugose, front trituberculate. Clypeus hemihexagonal, the sides slightly sinuate, anteriorly broadly truncate and feebly emarginate, the angles much rounded, genæ slightly prominent, but very obtuse, a distinct transverse carina parallel with the front margin. Thorax convex, slightly narrower in front, the sides feebly arcuate, hind angles rounded, base on each side feebly sinuate, punctuation rather coarse and sparse on the disc, denser and finer near the sides. Elytra not wider at base than the thorax, striæ rather deep and crenately punctured, intervals slightly convex and with few very fine punctures. Body beneath sparsely punctate and slightly alutaceous, the hind femora very sparsely punctate. First joint of hind tarsus shorter than the next three. Length .16–.18 inch; 4–4.5 mm.

The sexual differences are very feeble and consist in the slightly more prominent frontal tubercles, smaller size and narrower form of the male.

The presence of the transverse clypeal carina is less of a peculiar character than supposed by Dr. LeConte. The species looks not unlike some of the smaller forms of *granarius*.

Occurs in Colorado.

**A. pectoralis** Lec.—Oblong, convex, black, shining, elytra subopaque with greasy aspect. Antennæ piceous. Head sparsely punctate, front trituberculate. Clypeus with slight transverse carina, hemihexagonal, at middle feebly emarginate, the angles distinct, but not prominent, sides oblique, genæ slightly prominent, obtuse. Thorax convex, the sides parallel behind, arcuate in front, hind angles distinct, but obtuse; base regularly arcuate, disc sparsely, moderately coarsely punctate, with finer punctures intermixed. Elytra as wide as the thorax, sides parallel, humeri distinct, disc striate, striæ crenately punctured, intervals flat, distinctly, but finely alutaceous, with extremely minute sparse punctures. Body beneath more shining than above, sparsely punctate. Mesosternum opaque, strigose. Posterior femora very sparsely punctate. Legs piceous or black, tarsi ferruginous. First joint of posterior tarsus as long as the next three. Length .20 inch; 5 mm.

The only sexual difference observed in the male is the more evident frontal tubercles.

This species may be known in the present series by its very black color, the subopaque elytra and the presence of the transverse elevation of the clypeus.

Occurs in California, Washington Territory and Alaska.

**A. ruricola** Mels.—Oblong oval, sometimes slightly wider posteriorly, piceous black, shining. Antennæ ferruginous, club darker. Head distinctly trituberculate, sparsely punctate, in front slightly rugulose. Clypeus hemihexagonal, broadly emarginate at middle, the angles on each side obtusely prominent, gena feebly prominent and very obtuse. Thorax convex, narrower in front, sides feebly arcuate, the hind angles distinct, rather obtuse, base regularly arcuate, punctures of disc moderate, not densely placed, but very regularly disposed. Elytra a little wider than the thorax, humeri obtuse, disc rather deeply striate, striae rather coarsely crenately punctured, intervals convex, very finely sparsely punctate. Body beneath sparsely punctate. Posterior femora sparsely, finely punctate. First joint of posterior tarsus very little longer than the next two. Length .18-.22 inch; 4.5-5.5 mm.

In the males the frontal tubercles are more distinct, the thorax relatively larger and the spur of the anterior tibia rather stouter. In the female the angles of the clypeus on each side of the emargination are more distinct.

In the specimens from the more southern States the form is larger, the elytra less deeply striate, the intervals flatter and more distinctly punctulate. Specimens have been observed with the apices of the elytra somewhat paler in color. The form described by Harold (Berl. Zeitsch. 1863, 375) as *aurelianus* is the larger southern form.

Occurs from Canada and N. E. States to Texas and Colorado.

**A. anthracinus** Lec.—Oblong, moderately elongate, black, shining, legs brownish. Antennæ ferruginous, the club darker. Head moderately closely punctate in the female, less so in the male, front indistinctly trituberculate, the middle tubercle more prominent in the male. Clypeus hemihexagonal, anteriorly emarginate, more deeply in the male; the angles obtuse, sides oblique, gena feebly prominent, but obtuse. Thorax convex, larger in the male, narrower in front, sides arcuate, more strongly in the male, hind angles very distinct, but obtuse; base regularly arcuate, disc variably punctured in the sexes, rather densely punctured with intermixed punctures in the female, more sparsely punctured and smoother in the male. Elytra as wide as the thorax, parallel, humeri distinct, but obtuse; disc striate, striae closely punctured, intervals flat ♀ or slightly convex ♂ and with a row of fine punctures on each side adjacent to the striae. Body beneath sparsely punctate. Posterior femora sparsely punctate, with a row of coarse punctures parallel with the posterior margin near the knee. First joint of hind tarsus nearly equal to the next three. Length .28-.30 inch; 7-7.5 mm.

In the male the thorax has the sides parallel behind the middle, while in the female the thorax narrows from the base to the apex. The only differences observed between the sexes other than those noted above are found in the stouter anterior tibial spur and the stouter upper spur of the middle tibia.

By some accident, difficult to explain, Dr. LeConte has placed this species in the series with unequal spinules. There can be no doubt,

however, of its position in the present group. From either *ruvicola* or *pectoralis* it may be known by its much larger size and the absence of transverse carina on the clypeus.

Occurs in Utah, American Fork Cañon, at an elevation of 9500 feet.

#### GROUP C.

Scutellum small. Anterior tibiæ tridentate, feebly or obsolete crenulate above, the anterior face smooth, the first joint shorter than the second. Posterior tibiæ fimbriate with short equal spinules. Front trituberculate. Mesosternum carinate between the coxæ. Thorax as wide at base as the elytra.

In this series we have but few species, one of them introduced from Europe and become quite cosmopolitan. They are as follows:

First joint of hind tarsus not longer than the next two. Species entirely black.

**granarius.**

First joint of hind tarsus equal to next three.

Elytra reddish brown, the suture and side margin piceous; genæ not prominent.....**vittatus.**

Elytra piceous, maculate with small rufous spots; genæ moderately prominent.

**guttatus.**

**A. granarius** Linn.—Oblong, subcylindrical, piceous, shining, legs reddish brown. Antennæ rufo-testaceous with darker club. Head distinctly trituberculate, the clypeus with a feeble transverse ridge, sparsely punctured at middle, more densely at the sides. Clypeus at middle rather feebly emarginate on each side broadly rounded, the sides arcuate, the genæ very little prominent, obtuse. Thorax convex, very little narrower in front, the sides arcuate, hind angles distinct, but very obtuse, the basal marginal line fine, but entire; disc variably punctate in the sexes, almost entirely smooth in the male. Elytra parallel, humeri distinct, disc striate, striæ serrately punctured, intervals feebly convex and with few very minute punctures. Body beneath piceous or brown. Mesosternum opaque in front, carinate between the coxæ. Metasternum at sides sparsely punctate, abdomen rugulose and more coarsely punctate at the sides. Posterior femora very sparsely finely punctate. Length .16-.25 inch; 4-6 mm.

*Male*.—Frontal tubercles very distinct. Thorax larger and more convex, the surface almost smooth, with but few fine punctures sparsely placed. Anterior tibial spur stouter and more arcuate.

*Female*.—Frontal tubercles less distinct. Thorax smaller, less convex and with sparsely placed coarse punctures more numerous toward the sides.

In this species it will be observed that the first or sutural interval is as wide or even wider than the second, a character not commonly found among the species.

Originally an inhabitant of Europe, this species has been spread by commercial intercourse throughout the world. In our country it has appeared in every locality from which I have received Aphodii.



**A. vittatus** Say.—Oblong, subcylindrical, piceous or black, each elytron with a basal and apical rufous spot more or less confluent and rarely with the elytra entirely rufous, except margin and suture, or entirely black; legs reddish brown, the tarsi paler. Antennæ rufous, club darker. Head sparsely punctate and alutaceous, front trituberculate, clypeus subtruncate feebly emarginate, sides arcuate, genæ scarcely prominent. Thorax slightly narrower in front, the sides feebly arcuate, hind angles distinct, but obtuse; basal marginal line distinct, disc moderately convex, surface closely punctate with unequal punctures. Elytra parallel, humeri distinct, disc finely crenately punctato-striate, intervals flat with numerous fine punctures. Body beneath alutaceous, sparsely punctate. Mesosternum opaque in front, carinate between the coxæ. Posterior femora sparsely punctate. Length .14-.20 inch; 3.5-5 mm.

*Sexual characters.*—The frontal tubercles are more prominent in the male, and the spurs of the anterior tibia somewhat stouter.

As indicated above this species varies in the color of the elytra, from the form with those entirely red except the side margin and suture to others entirely black.

I have seen this species from every region of our country except from California.

**A. guttatus** Esch.—Oblong oval, feebly convex, shining, piceous brown, spotted with red. Antennæ dark red. Head feebly convex, front trituberculate with an anterior transverse plica sometimes obsolete, surface posteriorly moderately densely punctate, in front rugose. Clypeus truncate, feebly emarginate, the angles rounded, genæ subacute, moderately prominent. Thorax slightly narrowed in front, the sides straight, hind angles obtuse, disc sparsely punctate at middle, more coarsely at the sides, the punctures very unequal. Elytra as broad at base as the thorax, the sides moderately arcuate, the striae with moderately large punctures, the intervals flat, with fine scattered punctures. Body beneath dark reddish brown. Mesosternum carinate between the coxæ, in front smooth, on each side punctate. Legs brownish red. Anterior tibiæ acutely tridentate, above distinctly crenate. First joint of hind tarsus as long as the next three joints. Length 2.5-3 lines.

This species is unknown to me in nature, and the above description is copied from that of Baron Harold. As remarked by this author the species seems closely related to *congregatus* and *alcutus*. In fact the detailed description given of the red spaces on the elytra is almost exactly that of specimens seen of *congregatus*, and only the positive assertion of Baron Harold that the mesosternum is carinate causes me to believe the two species distinct. It must be remembered, however, that Erichson (Insect. Deutschl. iii, p. 814) places the species in a series with simple mesosternum.

Occurs in Alaska, Unalashka.

## GROUP D.

Scutellum small. Anterior tibiæ tridentate, serrulate or not above, the anterior face smooth, the first joint of the tarsus shorter than the second. Posterior tibiæ fimbriate at apex with equal spinules, the first joint of the tarsus variable. Head distinctly tuberculate. Thorax without basal marginal line.

In this group are associated two species which seem to have but little in common except the absence of basal thoracic line.

First joint of hind tarsus as long as the three following. Anterior tibiæ not serrulate above the teeth; color yellowish testaceous with the posterior portion of the head, a large thoracic spot and the suture of the elytra brown or piceous ..... **lividus.**

First joint of hind tarsus barely as long as the next two. Anterior tibiæ serrate above the teeth; color piceous, the margins and suture paler. **vestiarius.**

**A. lividus** Oliv.—Oblong, convex, luteo-testaceous, the posterior portion of the head and a large thoracic spot brown, elytra with the suture brown and a vague cloud on the disc. Antennæ pale testaceous. Head sparsely punctate, front tuberculate. Clypeus paler in color, emarginate at middle, on each side rounded, sides of clypeus slightly oblique, the genæ feebly prominent and obtuse. Thorax convex, slightly narrowed in front, sides arcuate, hind angles distinct, but very obtuse, basal marginal line entirely absent, disc with moderately coarse punctures very sparsely placed, with finer punctures intermixed, less punctate in male than in female. Scutellum with parallel or slightly sinuate sides, the apex obtuse. Elytra parallel, humeri obtuse, disc striate, striæ finely crenately punctate, the intervals very feebly convex with few very minute punctures. Body beneath sparsely, indistinctly punctate. Mesosternum smooth in front, not carinate between the coxæ. Hind femora smooth, stout, very sparsely minutely punctate. Length .18-.20 inch: 4.5-5 mm.

*Sexual characters.*—These are similar to those of *granarius*, the frontal tubercles are more prominent in the male, especially the middle one, the thorax is relatively larger, more convex and less punctured. The anterior tibial spur is also stouter than in the female, and the upper spur of the middle tibia shorter.

The coloration of this species is a little variable, especially in the size of the dark discal spot of the thorax and the distinctness of the elytral cloud. The head is always bicolored, the frontal suture dividing the pale clypeus from the darker portion posteriorly.

This species is widely distributed in the eastern hemisphere, and has been introduced in the West Indies, whence it has probably spread to our Southern States, extending as far west as New Mexico.

**A. vestiarius** Horn.—Moderately elongate, convex, piceous, the entire margin of head and body and the suture of the elytra reddish brown, surface shining. Antennæ rufo-testaceous. Head sparsely punctate, front trituberculate. Clypeus subtruncate at middle, very feebly emarginate, the sides feebly arcuate, genæ scarcely prominent, obtuse. Thorax convex, narrower in front, sides ar-

uate, hind angles distinct, but very obtuse; basal marginal line entirely wanting, disc sparsely punctate with intermixed punctures. Scutellum of usual triangular form. Elytra parallel, rather deeply striate, striæ indistinctly punctured, but more closely toward the base, intervals convex, with extremely few minute punctures. Body beneath sparsely punctate. Mesosternum in front alutaceous, opaque, between the coxæ subcarinate. Legs brownish testaceous, the posterior femora very sparsely finely punctate. Length .16 inch; 4 mm.

*Sexual characters.*—These seem to be similar to those above described for *lividus*.

A small inconspicuous species, notable as being one of two in the present series of the genus in the absence of basal marginal line of the thorax, while the other characters are quite different from *lividus*, with which it has been found advisable to associate it.

Occurs in Florida. Four specimens.

#### GROUP E.

Scutellum small. Anterior tibiæ tridentate, obsoletely or not crenulate above the teeth, first joint of the tarsus as long as the second. Posterior tibiæ fimbriate at apex with equal spinules, the first tarsal joint not as long as the next three. Head not tuberculate, but roughly punctured. Mesosternum not carinate.

The only species known to me which can enter this group is *A. rugifrons*, notable by its small size and a form of clypeus resembling *denticulatus*.

**A. rugifrons** Horn.—Oblong, slightly broader posteriorly, piceous shining, elytra variable, often yellow, ornate with black as in *inquinatus*, rarely almost entirely piceous. Legs ferruginous. Antennæ ferruginous, club piceous. Head coarsely, densely and roughly punctured. Clypeus broadly, feebly emarginate on each side a tooth, external to which is an angulation, sides of clypeus oblique, the genæ scarcely prominent and very obtuse. Thorax convex, piceous, the front angles usually paler, slightly wider at base than apex, sides feebly arcuate, hind angles distinct, but very obtuse; base broadly arcuate, basal marginal line fine and indistinct, surface with moderate punctures rather closely placed at the sides, more distant at middle. Elytra as wide as the thorax, a little broader behind the middle, striate, striæ closely punctured, intervals slightly convex, with few scattered punctures. Body beneath sparsely obsoletely punctate. Hind femora sparsely punctate. Length .10-.14 inch; 2.5-3.5 mm.

*Sexual characters.*—The anterior tibial spur of male is shorter and stouter than in the female; the upper middle tibial spur is also shorter.

The elytra vary much in color. Three specimens have the elytra in great part yellowish with elongate black markings resembling *inquinatus*. The typical specimen is almost entirely piceous with a few indistinct yellowish markings. In the latter individual the thorax is entirely piceous.

Occurs at San Diego, California.

## GROUP F.

Scutellum small. Head convex, without trace of frontal tubercles, the clypeus feebly emarginate. Anterior tibiae tridentate and crenate externally, the first tarsal joint shorter than the second. Posterior tibiae fimbriate at apex with short equal spinules, the first tarsal joint but little longer than the next two. Mesosternum not carinate.

This group was originally suggested by Dr. LeConte for *obtusus* (Hayden's Surv. 1878, Bull. iv, 2, p. 454), to which I find it necessary to add three others. Two of these are species formerly placed by me in the series with unequal spinules, partly on account of the poor material then in hand and partly by the judgment of Dr. LeConte, who indicated that position for *subaneus* (Pacif. R. R. Rep. 47 paral. Insects, p. 42). There can be no doubt, however, that the spinules are short, closely placed and as nearly equal among themselves as possible.

The following table will enable the species to be recognized:

Thorax with marginal line at base.

Marginal line very fine, but entire; general color brownish, elytra dull yellow; thorax sparsely punctate.....**obtusus.**

Marginal line deep and well marked; head and thorax black, the latter moderately closely and rather coarsely punctate.....**consociatus.**

Thorax with marginal basal line visible at sides only.

Intervals of elytra sparsely moderately punctate, the second and fourth intervals rugulose and opaque.....**subaneus.**

Intervals of elytra irregularly biserially punctate, the punctures nearly as coarse as those of the striae, intervals not rugulose.....**alternatus.**

These species are all from the region west of the Mississippi, extending from the Rocky Mountains to the Pacific coast.

**A. obtusus** Lec.—Moderately elongate and convex, brownish, moderately shining, elytra dull yellow or luteous, sides of thorax always paler, femora dull yellow, tibiae darker. Antennae entirely pale. Head dark brown, almost piceous the entire margin paler, front not tuberculate, almost smooth at middle closely punctate at sides and in front; clypeus very feebly emarginate, angles obtuse, sides slightly arcuate, genæ moderately prominent, obtuse. Thorax slightly narrowed in front, sides feebly arcuate in front, straight posteriorly, hind angles obtusely rounded, base arcuate with fine distinct marginal line, disc moderately convex, sparsely punctate, a little more closely at the sides, with extremely fine punctures intermixed. Elytra a little wider at base than the thorax, humeri very obtuse, disc feebly striate, striae closely finely punctate, intervals slightly convex, sparsely punctulate. Body beneath sparsely indistinctly punctate, Mesosternum coarsely punctate, a median oval opaque space divided by a fine groove. Anterior tibiae smooth in front, tridentate externally and crenulate above, the first tarsal joint shorter than the second. Posterior femora very sparsely punctate, the first tarsal joint shorter than the next three. Length .24-.26 inch; .6-6.5 mm.

The two specimens before me are females and have the anterior tibial spur slender, acute and slightly arcuate.

From Colorado without definite locality, and from Como, Wyoming. Probably a species of high altitudes.

**A. consociatus** n. sp.—Moderately elongate and convex, parallel, black, shining, legs brownish, elytra dull yellow, the sutural interval and lateral space piceous. Antennæ testaceous, club fuscous. Head coarsely and deeply punctured at the sides, the middle very convex and less punctate, front not tuberculate; clypeus somewhat retuse in front, the anterior margin scarcely emarginate, the angles rounded, the sides arcuate, genæ feebly prominent and obtuse. Thorax nearly twice as wide as long, the sides nearly straight and parallel, arcuate in front, hind angles obtusely rounded, base arcuate, the marginal line very distinct; disc convex, the punctures coarse and moderately closely placed over the entire surface, a little denser and coarser at the sides. Elytra as wide at base as the thorax, humeri very distinct, sides parallel, less striate, striæ with moderately coarse and close, but not deep punctures, intervals very flat, finely alutaceous, irregularly biserially, indistinctly punctate; color dull yellow with the sutural interval and a lateral posthumeral stripe piceous, sometimes the intervals 3-5-7 are darker. Body beneath alutaceous, sparsely punctate. Mesosternum not carinate, coarsely punctate, an oval median opaque alutaceous space. Anterior tibiæ smooth in front, tridentate externally, crenate above, the first tarsal joint shorter than the second. Posterior femora sparsely punctate, the first tarsal joint nearly as long as the next three. Length .20 inch; 5 mm.

*Male*.—Spur of anterior tibia stout, falciform, but feebly curved.

*Female*.—Spur of anterior tibia slender, acute, slightly arcuate.

The majority of the specimens have the suture piceous and the lateral stripe broad beginning at the humerus and extending posteriorly, contiguous to the lateral margin, except near its end. There is one specimen before me with the third, fifth and seventh intervals darker, and it is probable that specimens will occur entirely black.

It is highly probable that this species is mistaken for *subaneus* or *alternatus* in most collections, from either of which it may be known by the entire basal marginal line.

Occurs in California, the precise region unknown, but probably from the south.

**A. subaneus** Lec.—Oblong, convex, black with distinct aneous lustre, elytra dull yellow, irregularly striped with piceous, rarely entirely black, legs rufo-piceous. Antennæ rufo-testaceous, club piceous. Head convex, without tubercles, coarsely punctate, densely at the sides. Clypeus broadly and feebly emarginate, obtuse. Thorax feebly narrowed in front, the sides nearly straight, slightly arcuate in front, hind angles nearly rectangular, but slightly obtuse at apex, base arcuate, with the marginal line distinct for a short distance near the angles, disc convex, moderately punctate, the punctures close but not dense and equally dispersed over the entire surface usually with a smooth median line. Elytra as wide at base as the thorax, humeri obtuse, disc finely striate, striæ

finely and closely punctate, intervals flat, irregularly biserially punctulate, the second and fourth intervals often wrinkled and opaque. Metasternum at sides coarsely punctate, abdomen alutaceous, indistinctly punctate. Mesosternum very coarsely punctate, rather shining, without opaque space and not carinate. Anterior tibiae smooth in front, tridentate externally and crenulate above, the first tarsal joint a little shorter than the second. Posterior femora sparsely punctate, the first tarsal joint scarcely longer than the next two. Length .18-.20 inch; 4.5-5 mm.

*Male*.—Anterior tibial spur stout, falciform, acute at tip.

*Female*.—Anterior tibial spur slender and slightly arcuate.

The elytra are variable in color. Usually they are in great part dull yellow with the suture and a broad lateral stripe piceous as in *consociatus*, but the alternate intervals 1-3-5-7 may be piceous, united at their base and apex, rarely the entire elytra are entirely black. The apices of the elytra are distinctly alutaceous and in the paler specimens the side margin posteriorly and apex have a reddish appearance. Specimens rarely occur with the head much less conspicuously punctured, in fact comparatively smooth, this is independent of sex, although the females are generally rougher.

Two specimens from Washington Territory are before me with the intervals 2 and 4 not wrinkled and opaque, those may represent another species as there are other slight differences, but with such a close resemblance to the others I am unwilling to separate them with so little material.

Occurs in California (and ? Washington Territory).

**A. alternatus** Horn.—Moderately elongate and convex, parallel, black, shining, legs brownish or piceous, elytra variable, usually with intervals alternately dull yellow and piceous. Antennae rufous, club darker. Head moderately convex, front not tuberculate, sparsely rather finely punctate; clypeus broadly and feebly emarginate at middle, the angles broadly rounded, sides oblique slightly sinuate posteriorly, genæ moderately prominent, but obtuse. Thorax nearly twice as wide as long, slightly narrower in front, sides very feebly arcuate, hind angles obtuse, base arcuate, the marginal line distinct only at the sides; disc finely not closely punctate, regularly disposed and very little coarser near the sides. Elytra as wide at base as the thorax, humeri obtuse, disc striate, the punctures moderately coarse and close, intervals flat, irregularly biserially, moderately coarsely punctate, intervals not alutaceous. Body sparsely indistinctly punctate beneath. Mesosternum coarsely punctate, often with a broad smooth space at middle. Anterior tibiae smooth in front, tridentate externally and serrulate above, the first tarsal joint shorter than the second. Posterior femora sparsely punctate, the first tarsal joint not as long as the next three. Length .18-.23 inch; 4.5-6 mm.

*Male*.—Anterior tibial spur stout, straight, curved and acute at tip.

*Female*.—Anterior tibial spur slender, slightly curved, acute at tip.

In this species as in *subaneus*, the elytra vary in coloration. In those in which the elytra are bicolored the side margin posteriorly and the apex are somewhat reddish. The typical form has the alternate intervals 1-3-5-7 piceous, and a broad lateral space of the same color, from this the elytra may become totally black as in a small series from Arizona, some of which were of the usual vittate form, the others black. In the black forms the mesosternum is more punctured and the median smooth space less evident.

Occurs at Fort Yuma, Cal., eastward through Arizona, north to Colorado and the Bitter Root Valley of Montana.

#### GROUP G.

Scutellum small. Anterior tibiæ tridentate, not serrulate above, the anterior face smooth, the tarsi with first four joints equal in length. Posterior tibiæ fimbriate with equal spinules. Head not tuberculate. Thorax narrowed at base and with entire marginal line. Elytra oval, the humeri dentiform. Mesosternum carinate between the coxæ.

The narrowing of the thorax behind and the elytra narrowed at base with dentiform humeri, give the species a facies almost peculiar to them, and the thorax and elytra seem more distant at their bases than in the vast majority of species.

The following species are at present known :

Clypeus distinctly dentate each side of the emargination.

First joint of hind tarsus not as long as the next three; punctuation of thorax intermixed..... **nevadensis.**

Clypeus angulate not dentate each side of the emargination.

First joint of hind tarsus as long as the next three; punctuation of thorax coarse, irregularly scattered, not intermixed..... **gentilis.**

Clypeus feebly emarginate at middle, broadly rounded each side, genæ not prominent.

First joint of hind tarsus as long as the next three; punctuation of thorax as in *gentilis*..... **cribratus.**

**A. nevadensis** Horn.—Oblong, piceous or black, brown when immature, shining. Antennæ brown. Head not tuberculate, surface rugose, especially in front and at the sides. Clypeus slightly impressed in front, broadly not deeply emarginate, on each side denticulate, the sides arcuate, genæ moderately prominent and subacute. Thorax broad, widest slightly in front of middle, sides arcuate, narrowing to base, hind angles broadly rounded, base arcuate, basal marginal line deep; disc convex, sparsely punctate with coarse and fine punctures intermixed. Elytra oblong oval, slightly narrowed at base, the humeri slightly dentiform, disc convex, moderately deeply striate, striae moderately coarsely and closely punctate, intervals feebly convex, sparsely punctulate. Body beneath

sparsely punctate, usually a little paler in color than above. Mesosternum coarsely punctured in front, obtusely carinate between the coxæ. Posterior femora sparsely coarsely punctate. Wings feebly developed. Length .22-.30 inch; 5.5-7.5 mm.

*Sexual characters.*—The only differences observed in the ten specimens before me are that the males have the anterior tibial spur stouter and more curved, and the upper spur of the middle tibiae is less than half the length of the lower spur.

Occurs in Nevada and the extreme north of California.

**A. gentilis** n. sp.—Oblong, black, shining. Antennæ brown. Head not tuberculate, granulate punctate at front and sides. Clypeus impressed and emarginate at middle, on each side angulate, sides of clypeus arcuate, genæ prominent and acute. Thorax broad, convex, narrower at base, sides arcuate, broadest at middle, hind angles broadly rounded, basal marginal line deep, surface with very coarse and deep punctures sparsely and irregularly placed. Elytra oval, a little narrowed at base, humeri slightly dentiform, surface striate, striæ not closely punctate, intervals very slightly convex, with few extremely minute punctures. Mesosternum moderately densely punctured in front, carinate between the coxæ. Body beneath sparsely punctured, the sides of the abdomen rugulose. Posterior femora smooth, with three or four punctures in a row near the knee. Length .28 inch; 7 mm.

Of this species I have seen but one female specimen. It is closely related to *nevadensis*, and differs from that, in addition to the characters given in the table, in the more prominent and acute genæ.

One specimen, San Francisco, Cal.

**A. cribratus** Lec.—Oblong, piceous black or brown, smooth, shining. Antennæ ferruginous. Head not tuberculate, sparsely punctate and slightly rugose at the sides and in front. Clypeus broadly and feebly emarginate at middle, rounded each side, genæ scarcely prominent. Thorax broad, narrowed at base, sides arcuate, hind angles broadly rounded, basal marginal line deep, disc convex with coarse and deep punctures sparsely and irregularly placed. Elytra oblong oval, slightly narrowed at base, the humeri slightly dentiform, the striæ deep, rather coarsely and closely, sometimes crenately punctured, intervals convex, smooth. Mesosternum in front coarsely closely punctate, between the coxæ obtusely carinate. Metasternum and abdomen at their sides coarsely punctured and rugulose. Hind femora sparsely punctate or smooth. Length .18-.28 inch; 4.5-7 mm.

The only sexual characters observed in the male are a thicker and more arcuate spur to the anterior tibia and the upper spur of the middle tibia is shorter than half the lower.

Five specimens, California (north) and Oregon.

To this group should probably be referred the following species:

**Oxyomus cadaverinus** Mann., Bull. Mosc. 1843, ii, p. 261.—Oblongus, supra nigro-subtus rufo-piceous, clypeo profunde emarginato, thorace anterior dilatato varioloso, elytris punctato-striatis. Longit. 3 lin. Latit. 1½ lin.



From the above very inadequate description it is impossible to assign the species a place. I was at one time disposed to consider the species described further on as *ovipennis* synonymous, but at present it would be certainly unwise to consider either that or any one of the present group identical with it.

## GROUP II.

Scutellum small. Front convex, with at most very feeble traces of tubercles. Anterior tibiæ normally tridentate, either obsoletely or not at all serrulate above, the first joint of anterior tarsi as long or longer than the second in all except *stupidus*. Posterior tibiæ fimbriate at apex with unequal spinules, the first joint of the tarsus variable. Mesosternum simple or finely carinate in *lentus*.

This group seems to be the most homogeneous of the present series. The species are all more or less opaque, usually extremely finely pubescent, the thorax always densely punctured; they may be distinguished in the following manner:

Elytral intervals flat, the striæ finely or not punctured.

Mesosternum not carinate; color black or piceous.

Elytral intervals without punctures or roughness, striæ without punctures.

**opacus.**

Elytral intervals punctate and often submuricate.

Clypeus on each side distinctly angulate; first joint of posterior tarsus long.....**lutulentus.**

Clypeus on each side rounded; first joint of posterior tarsus not longer than the next two.....**stupidus.**

Mesosternum finely carinate between the coxæ.

Species small, ferruginous.....**lentus.**

Elytral intervals very convex, the striæ broad, with coarse, distant punctures; mesosternum not carinate.....**decipiens.**

Specimens of *lutulentus* occur with no angulation of the clypeus, in this case the structure of the anterior and posterior tarsi, the larger size and more prolonged elytra will distinguish them.

**A. opacus** Lec.—Oblong, moderately robust, black, opaque, a very narrow sutural space shining. Antennæ ferruginous, club darker. Head moderately convex, finely and rather densely punctured, front not tuberculate. Clypeus emarginate at middle, the angles on each side well marked, but obtuse; sides arcuate, genæ moderately prominent, but obtuse. Thorax convex, sides parallel posteriorly arcuate in front, hind angles scarcely distinct, surface rather densely and finely punctured except along the median line. Elytra not wider than the thorax, humeri finely dentate, disc moderately deeply striate, the striæ not distinctly punctured, intervals very flat and opaque without trace of punctures or tubercles. Body beneath coarsely, but not deeply punctured, the abdomen very

indistinctly so, the surface alutaceous. Posterior femora coarsely and rather closely punctate. Tarsi brownish, the first joint of the posterior tarsi as long or longer than the next three. Length .22-.24 inch: 5.5-6 mm.

Of this species I have seen but two specimens only one of which is now before me, it shows no sexual characters.

The spinules of the apex of the hind tibiæ are very plainly unequal. The mesosternum is coarsely punctured in front, not carinate between the coxæ.

This species resembles *lutulentus* in form, but is more obtuse posteriorly.

Occurs in California and Vancouver.

**A. *lutulentus*** Hald.—Oblong, moderately elongate, black, subopaque. Antennæ ferruginous, club piceous. Head densely punctulate with feeble traces of frontal tubercles in the male. Clypeus broadly but feebly emarginate at middle, strongly angulate or subdentate each side, sides of clypeus arcuate with a distinct sinuation at the end of the frontal suture, genæ prominent, but obtuse. Thorax convex, gradually narrower to front ♀ or with the sides parallel and arcuate near the front angles ♂, hind angles very obtuse, base arcuate, but slightly sinuous, disc convex, feebly shining ♂ or opaque ♀, the punctures rather fine, very dense over the entire surface ♀ or sparser at middle ♂. Elytra not wider than the thorax, oblong oval gradually narrowed to apex, humeri slightly dentiform, disc striate, striæ punctured, intervals flat opaque, longitudinally strigose with moderately coarse punctures which are often submuricate or granular. Body beneath more shining than above, sparsely punctate. Mesosternum opaque and strigose, not carinate between the coxæ. Hind femora coarsely sparsely punctate. First joint of hind tarsus not longer than the next two. Length .22-.28 inch: 5.5-7 mm.

*Male*.—Spur of anterior tibia very long, equalling the first four tarsal joints. Upper spur of middle tibia very short and obtuse. Posterior edge of hind femora very broadly and obtusely angulate, the posterior tibiæ rather broad and thin, the lower face smooth the transverse ridges very feeble, one only being at all indicated.

*Female*.—Anterior tibial spur of normal size. The posterior femora of normal form, the tibiæ rather slender, the ridges indicated, but feeble.

The females are of smaller size and more opaque than the males, the thorax more narrowed in front and more densely punctured. In this sex I have observed specimens without the emargination of the clypeus and consequently without trace of angulation, but these may be distinguished from *stupidus* by their larger size and the more prolonged elytra.

At the time of my former synopsis this was one of our rarest species and the female was apparently the only sex known and for this reason the curious male characters escaped observation.

In very well preserved fresh specimens the surface is sparsely clothed with very short almost microscopic pubescence, no special mention is made of it in the description as by far the larger number of specimens are entirely deprived of pubescence.

**A. stupidus** Horn.—Oblong moderately robust, piecous or black, subopaque, sparsely pubescent, legs rufopiceous. Antennae, including club, rufotestaceous. Head moderately densely punctate, smoother in front and at the sides, a single very feeble frontal tubercle. Clypeus hemihexagonal, apex very feebly emarginate, on each side rounded, sides oblique slightly sinuate, the genae feebly prominent obtuse. Thorax convex, sides posteriorly parallel or very feebly arcuate, hind angles distinct, but obtuse; base regularly arcuate, surface moderately finely and densely punctate and alutaceous. Elytra not wider than the thorax, humeri obtuse, color black or piecous, sometimes with the humeri and apex faintly rufous, disc striate, striae coarsely punctured, intervals flat, subbiserially coarsely punctate, the punctures often submuricate. Body beneath sparsely punctate, the abdomen smoother and more shining. Posterior femora sparsely punctate, the first joint of posterior tarsus not longer than the next two. Length .16-.20 inch; 4-5 mm.

No sexual characters have been observed in the specimens before me. Several are more shining than the others and thorax larger or at least, less narrowed in front. These are probably males. The specimen, observed at the time of my former revision, in which the elytra were apparently sinuate near the apex is not now before me, but in the six specimens now at hand, in which I am reasonably sure both sexes are present no such character has been seen.

In this species the pubescence seems to be more persistent than in *lutulentus*, both on the thorax and elytra, it is, however, extremely short and inconspicuous.

Occurs in North Carolina and Georgia.

**A. lentus** Horn.—Elongate oval, feebly convex, ferruginous brown, head and thorax slightly darker, surface feebly shining, slightly pubescent. Antennae ferruginous. Head convex without trace of frontal tubercles, moderately closely punctate and finely alutaceous, smoother in front and near the side. Clypeus hemihexagonal, scarcely emarginate in front, the angles broadly rounded, sides oblique, genae scarcely prominent beyond the eyes. Thorax convex, slightly narrower in front, sides feebly arcuate, hind angles well defined, but obtuse; base arcuate, disc moderately densely punctate, somewhat smooth at middle. Elytra not wider than the thorax, humeri obtuse, disc striate, striae rather coarsely punctured, intervals slightly convex, irregularly biserially punctate, the punctures nearly as coarse as those of the striae. Body beneath sparsely indistinctly punctate. Posterior femora sparsely finely punctate, first joint of hind tarsi as long as the next three. Mesosternum opaque, finely carinate between the coxae. Length .14-.16 inch; 3.5-4 mm.

In the five specimens before me no sexual differences have been observed.

This species by the form of the elytra resembles a diminutive pale *lutulentus*. The pubescence is a little more conspicuous and less erect than is the preceding species.

Occurs in Pennsylvania, Georgia, Illinois and Massachusetts (Lowell, Blanchard).

**A. decipiens** n. sp.—Moderately elongate, parallel, ferruginous brown, opaque. Antennæ rufo-testaceous with darker club. Head moderately convex, finely and rather closely but very indistinctly punctate, front without trace of tubercles. Clypeus impressed in front, broadly emarginate at middle, subangulate each side, sides arcuate, genæ feebly prominent and obtuse. Thorax nearly twice as wide as long, not narrowed in front, sides feebly arcuate, hind angles distinct, but obtuse; base regularly arcuate; the marginal line rather broad, disc moderately convex, the punctures very coarse, but not deep; closely placed posteriorly and at sides, finer near the front, the intervals between the punctures somewhat rugose. Elytra as wide at base as the thorax, humeri distinct, slightly dentiform, sides nearly parallel, striæ broad and deep with coarse but indistinct punctures not closely placed, the intervals convex, very little wider than the striæ. Mesosternum not carinate, opaque finely alutaceous. Metasternum coarsely but not deeply punctured. Abdomen obsoletely scabrous, not punctate. Anterior tibiæ tridentate externally, not crenate above, the first joint of the tarsus as long as the second. Posterior femora coarsely punctured, the first tarsal joint as long as the next three. Length .14 inch; 3.5 mm.

This species by its general appearance is more related to the opaque species of *Atenius* than to any species of *Aphodius* known to me, and it is placed in the latter genus after a study made when the preliminary work on the other genera had been completed. The posterior tibiæ are certainly without the apical prolongation and the transverse ridges though present are feeble. The mandibles have not been examined, as this would require a dissection of the unique.

One specimen, western Nevada (Morrison).

#### GROUP I.

Scutellum small. Posterior tibiæ fimbriate at apex with unequal spinules. Front never very roughly sculptured, tuberculate or not, clypeus never with a transverse ridge. Surface of body smooth and shining without trace of pubescence.

The other characters of the group are variable. The species here included are more than a third of the entire number known in our fauna, and while the characters seem hardly of sufficient moment to divide them into groups they may be separated into series some of which at present seem natural and homogeneous, others are purely artificial.

In my present studies I have been unable to follow the method proposed by Erichson, of separating the species with and those without frontal tubercles into separate groups. Unfortunately our species are too variable. We have a certain number with well marked frontal tubercles which are more pronounced in the males, while males of other species have the tubercles as feeble as those of the females noted and their females may not be at all tuberculate. The present group is therefore the equivalent of groups I and L of my former paper (Trans. Am. Ent. Soc. 1870).

In order that the species may be more readily handled and the synoptic table rendered less unwieldy I proposed to divide the group into the following series:

- Side margin of thorax explanate, usually a concavity near the hind angle. Series **I-a**
- Side margin of thorax not explanate.....2.
- 2.—Mesosternum distinctly carinate between the coxæ. Thorax without basal line. Front tibiæ punctate on anterior face, the first tarsal joint longer than the second .....Series **I-b**
- Mesosternum not carinate. Anterior tibiæ smooth in front.....3.
- 3.—Species entirely ferruginous, luteous or rufo-testaceous, never in any part black .....Series **I-c**
- Species in great part piceous, head and thorax always black or piceous, although at times with the sides pale. Elytra variable in color, either black, dull red or yellow maculate.....Series **I-d**

The first two series might form fairly natural groups while the other two are rather heterogeneous, but any attempt to further divide them would result in more confusion than benefit.

#### SERIES **I-a.**

Front not at all or only feebly tuberculate. Side of thorax explanate, the margin usually slightly reflexed, the basal marginal line wanting or very fine. Anterior tibiæ smooth in front. Mesosternum not carinate, except in *explanatus*.

The species of this series are all moderately large and belong to the region of our country west of the Mississippi River and east of the Sierra Nevada Mountains.

They may be distinguished in the following manner:

- Mesosternum distinctly carinate between the coxæ; clypeus angulate each side of the emargination; thorax closely and equally punctured; sides of thorax and elytra dull red, the intervals punctulate...**explanatus.**
- Mesosternum not carinate.....2.

- 2.—Clypeus distinctly denticulate each side of the emargination, the sides strongly arcuate..... **rudis**.  
 Clypeus angulate each side of emargination the sides oblique; no depression near hind angles of thorax.....**phaeopterus**.  
 Clypeus feebly emarginate at middle, on each side broadly rounded.....3.
- 3.—Color piceous, the elytra in one species reddish yellow.  
 Striæ of elytra moderately deep, intervals convex, not punctulate; entirely piceous.....**brevicollis**.  
 Striæ moderately deep, intervals convex and distinctly punctulate. **marginatus**.  
 Striæ fine, scarcely punctulate, intervals nearly flat, finely and densely punctulate; elytra reddish yellow.....**ochreipennis**.  
 Color entirely rufo-ferruginous; surface polished, the sculpture very feeble; striæ of elytra fine and very finely punctulate; intervals flat and smooth .....**Haldemani**.

**A. explanatus** Lec.—Elongate, moderately convex, piceous shining, the sides of the head, sides of thorax broadly and base narrowly, elytra and legs dull rufo-testaceous. Antennæ rufo testaceous, the club somewhat darker. Head moderately convex, finely and moderately closely punctured, front feebly trituberculate. Clypeus broadly but not deeply emarginate at middle, the angles on each side prominent, subacute and slightly reflexed, the sides oblique, genæ moderately prominent but obtuse. Thorax nearly twice as wide as long, narrower in front, the sides broadly explanate and slightly reflexed, arcuate from the hind angles which are very broadly rounded, base arcuate, slightly sinuate each side of middle, a distinct but very fine marginal line; disc moderately convex, a slight median longitudinal impression near the base, the punctures moderate in size, closely placed, somewhat coarser and denser near the sides. Elytra slightly narrower at base than the thorax, humeri obtuse, sides slightly arcuate behind the middle, disc striate, striæ finely and closely punctured, intervals moderately convex and with very numerous punctures irregularly placed. Body beneath moderately finely not closely punctate. Abdomen more closely and coarsely punctate, sparsely pubescent. Mesosternum opaque at middle and alutaceous, at sides punctate, very distinctly carinate between the coxæ. Anterior tibiæ smooth in front, tridentate externally and obsoletely crenate above, the first tarsal joint nearly as long as the second. Posterior femora sparsely punctate, a few coarse punctures in line near the knee, the first tarsal joint as long as the next three. Length .34 inch; 8.5 mm.

The only specimen seen is a female, the spur of the anterior tibia is slender and acute.

This species is remarkable for its size and style of coloration. It is the only one in the present series with the sides of the piceous thorax conspicuously paler in color, otherwise it resembles *ochreipennis*, this being the only one for which it might be mistaken. The presence of a very well elevated carina between the middle coxæ is a character that would not be expected in this series, and this with the explanate and closely evenly punctured thorax make it one of the most easily to be recognized species in our fauna.

Occurs in Colorado, collected by Prof. F. H. Snow.

**A. rudis** Lec.—Moderately elongate and convex, dark chestnut brown, shining. Antennæ pale brownish testaceous. Head sparsely punctate at the sides, smoother at middle, front not tuberculate; clypeus broadly but feebly emarginate with a dentiform angulation each side, sides arcuate, slightly smooth, with short fimbriæ, the genæ prominent and subacute. Thorax twice as wide as long, not narrowed in front, the sides very feebly arcuate, the margin explanate, hind angles obtuse, base arcuate at middle, sinuate each side near the hind angles, without trace of basal marginal line; disc moderately convex, with extremely fine and sparse punctures and with numerous large but shallow punctures over the entire surface except in a transverse space one-fourth from apex, and along the median line. Elytra a little narrower at base than the thorax, slightly wider behind, finely striate, striæ with fine close punctures, intervals flat, very minutely punctulate. Body beneath sparsely indistinctly punctate. Mesosternum not carinate. Anterior tibiæ tridentate and indistinctly crenulate above, the anterior face smooth; the first joint of tarsus shorter than the second. Posterior femora sparsely punctate, the first joint of the tarsus as long as the next three. Length .26 inch; 6.5 mm.

The specimen before me is probably a female, it shows no sexual characters.

In the original description of this species Dr. LeConte was disposed to place the species with *ovipennis* and others in which the thorax is distinctly narrowed posteriorly and the sides sinuate in front of the hind angles. These two characters do not exist in the present species, and the explanate sides of the thorax suggest its relationship. The depression of the thorax near the hind angles so well marked in most of the explanate species is not very evident here.

Occurs in Colorado.

**A. phæopterus** Lec.—Oblong, moderately convex, piceous, shining, sides of head and thorax sometimes the elytra paler, legs brownish. Antennæ rufo-testaceous, club somewhat darker. Head moderately convex, sparsely punctulate, without frontal tubercles, but with a slight tuberosity each side: clypeus convex at middle, apex broadly but feebly emarginate, the angles each side distinct, but not dentiform, sides oblique slightly arcuate, genæ moderately prominent, but obtuse. Thorax nearly twice as wide as long, the sides parallel posteriorly, arcuate in front, margin narrowly explanate, more widely in front, without depression near the hind angles, these distinct, but obtuse: base regularly arcuate, with an extremely feeble trace of a marginal line, disc convex with moderately coarse punctures not densely placed along the sides and base, with finer punctures intermixed and in the antero-median space. Elytra a little narrower at base than the thorax, slightly wider posteriorly, humeri distinct, disc rather deeply striate, striæ closely finely punctate, intervals convex finely punctulate, more distinctly near the apex. Body beneath sparsely punctate. Mesosternum not carinate. Anterior tibiæ smooth in front, tridentate externally and crenulate above, the first joint of the tarsus much shorter than the second. Posterior femora sparsely punctate, the first joint of the tarsus very nearly as long as the next three. Length .28 inch; 7 mm.

*Male*.—Upper spur of middle tibia short, stout, abruptly bent at apex. Middle and posterior femora more punctate along the posterior edge and slightly hairy.

*Female*.—Upper spur slender. Femora not pilose.

This species has been compared by Dr. LeConte with *cruentatus*, with which it seems to have much less in common than with *marginatus*. The latter is more dilated posteriorly, the thorax more widely margined with a distinct concavity in the hind angles of the thorax. In *phacopterus* the angles on each side of the emargination of the genæ are well marked, while in *marginatus* they are broadly rounded.

Occurs in Washington Territory, Idaho and Montana.

**A. brevicollis** Lec.—Oblong, moderately elongate and convex, piceous, shining, legs brownish testaceous. Antennæ rufo-testaceous. Head piceous, the margin reddish brown, surface punctulate, sparsely at middle, more coarsely near the sides, front with a slight tuberosity each side: clypeus broadly emarginate, the angles on each side rounded, sides arcuate, feebly sinuate, genæ prominent, but obtuse. Thorax more than twice as wide as long, slightly narrowed in front, the sides slightly undulating, the lateral margin rather widely explanate and broader posteriorly, a distinct concavity near the hind angles, these very obtuse, base feebly arcuate without marginal line; disc moderately convex, piceous, the margins paler, surface smooth with very large punctures placed distantly near the sides. Elytra narrower at base than the thorax, slightly wider posteriorly, humeri obtuse, surface rather deeply striate, striæ closely not coarsely punctured, intervals slightly convex, smooth. Body beneath sparsely and indistinctly punctate. Mesosternum not carinate. Anterior tibiæ strongly tridentate, not crenate above, anterior face smooth, the tarsus with first joint shorter than the second. Posterior femora smooth, the first joint of tarsus not as long as the next three. Length .32 inch; 8 mm.

The unique before me, which is the type, shows no special sexual characters.

The characters given in the table will readily distinguish it from the species at present known.

Occurs in Nebraska; one specimen kindly given me by Mr. H. Ulke.

**A. marginatus** Lec.—Moderately elongate and convex, somewhat broader posteriorly, black or piceous, elytra and legs very dark brown. Antennæ pale brown. Head moderately convex, front without tubercles, but with a slight tuberosity each side, surface punctulate with somewhat coarser punctures near the side; clypeus very feebly and broadly emarginate, the angles very obtuse, the sides oblique, genæ moderately prominent, but obtuse. Thorax more than twice as wide as long, a little narrower in front, sides very feebly arcuate, the margin rather broadly explanate with a well marked depression near the hind angles, these very obtuse, base feebly arcuate without marginal line; disc moderately convex, with numerous but not closely placed fine punctures and with very many large punctures which are closely placed near the hind angles and



almost absent in a large space behind the middle of the apical margin. Elytra a little narrower at base than the thorax, gradually wider posteriorly, humeri very obtuse, disc striate, the striae deep closely but finely punctured, intervals convex and finely punctulate. Body beneath sparsely indistinctly punctate. Mesosternum not carinate. Anterior tibiae smooth in front, strongly tridentate, externally, but not crenate above, the first tarsal joint shorter than the second. Posterior femora very sparsely punctate, first tarsal joint not as long as the next three. Length .30-.32 inch; 7.5-8 mm

The two specimens before me show no sexual differences, they are probably females.

This species resembles *brevicollis* very closely in form and general appearance, and the two differ especially in the different punctuation of the thorax and elytra.

Occurs in eastern Nevada; two specimens.

**A. ochreipennis** Horn.—Moderately elongate and convex, piceous nearly black, lateral margin of head and thorax paler, elytra reddish yellow, legs brown. Antennæ paler. Head convex, without trace of any elevations, surface sparsely, very finely punctulate; clypeus very broadly and feebly emarginate, broadly rounded each side, the sides arcuate, genæ moderately prominent, but obtuse. Thorax nearly twice as wide as long, sides moderately arcuate, margin explanate, a rather deep depression near the hind angles, these very indistinct, base arcuate at middle, obliquely sinuate each side, without trace of marginal line; disc convex with numerous, but not densely placed fine punctures, and with very coarse punctures near the base and sides, densely placed in the angular concavity. Elytra narrower at base than the thorax, slightly wider posteriorly, humeri very obtuse, disc finely striate, striae with very fine punctures, intervals nearly flat and with numerous fine punctures. Body beneath coarsely punctured at the sides, abdomen more sparsely punctured. Mesosternum not carinate. Anterior tibiae smooth in front, tridentate externally, but not crenulate above. Posterior femora sparsely punctate. Length .26 inch; 6.5 mm.

One specimen, probably a female, without anterior or posterior tarsi has been seen.

A very distinct species among those with explanate thorax by the very oblique situation of the base of the thorax near the hind angles so that the angles are obliterated, and when the thorax is viewed from above it seems to be narrower at base than apex. The color of the elytra is paler than the other species with a piceous body color, but this is a character of secondary importance.

One specimen, Owen's Valley, California.

**A. Haldemani** (*politus* || Horn).—Oblong, moderately convex, rufo-testaceous, shining. Antennæ pale. Head moderately convex, smooth shining, without trace of frontal tubercles or punctures; clypeus broadly but feebly emarginate, angles on each side broadly rounded, sides slightly sinuate, the genæ moderately prominent, but obtuse. Thorax transverse, scarcely narrowed in

front, the sides feebly arcuate, the hind angles broadly rounded, base feebly arcuate, lateral margin narrowly explanate, more broadly near the hind angles where there is a broad, but shallow depression; disc moderately convex, smooth and shining, a few coarse, but shallow punctures opposite the base of each elytron and others in the depression and close to the side margin. Elytra a little narrower at base than the thorax, humeri very obtuse, disc very finely striate, the striae scarcely visible at the sides; striae very finely and rather closely punctured, intervals flat and polished. Mesosternum not carinate. Body beneath sparsely punctate, shining. Posterior femora with a row of coarse punctures near the knee; first joint of hind tarsus as long as the next three. First joint of anterior tarsus shorter than the second, the tibia smooth in front and not serrulate above the teeth. Length .32 inch; 8 mm.

*Male*.—Spur of anterior tibia elongate triangular, broader and truncate at tip. Middle and posterior femora ciliate at basal half of posterior margin.

*Female*.—Spur of anterior tibia stout, curved and acute at tip. Femora not fimbriate. Thorax with more numerous and convex punctures at the sides.

This species is notable for its size, color and highly polished surface. I have changed the name as Mulsant had used the same for another species, the description of which appeared a few months earlier the same year.

Occurs in Texas and Kansas.

#### Series I-b.

Front not tuberculate. Thorax at sides not explanate, without basal marginal line, Mesosternum distinctly carinate between the coxæ. Anterior tibiæ punctate in front, the first tarsal joint longer than the second.

The last two characters together are not known in any other species in our fauna. At present but two species are known, they closely resemble each other superficially, but may be separated in the following manner:

Posterior tibiæ stout; first joint of posterior tarsus not as long as the next three.

**rubeolus.**

Posterior tibiæ slender; first joint of posterior tarsus longer than the next three.

**stercorosus.**

These belong to the fauna of the Atlantic region, and the second seems more widely spread and common.

**A. rubeolus** Beauv.—Form moderately elongate and convex, rufo-ferruginous or pale castaneous, shining. Antennæ rufo-testaceous. Head convex, sparsely finely punctate, front not tuberculate; clypeus feebly emarginate at middle, the angles each side obtuse, the sides arcuate, the angles each side obtuse, the sides arcuate, genæ scarcely more prominent than the eyes. Thorax slightly narrowed in front, sides feebly arcuate, hind angles very obtusely rounded, base broadly arcuate without marginal line, disc convex, at middle very sparsely finely

punctate, near the sides the punctures more numerous and larger. Elytra a little wider than the thorax, subparallel, finely striate, striae finely or obsoletely punctulate, intervals flat and smooth. Body beneath very sparsely punctate and alutaceous. Mesosternum distinctly carinate between the coxæ, opaque and alutaceous in front. Anterior tibiae punctate on the anterior face, tridentate externally and serrate above; first joint of front tarsus much longer than the second. Posterior tibiae stout, the first joint of hind tarsus not as long as the next three. Length .14-.20 inch; 3.5-5 mm.

In the comparatively few specimens examined I have observed no sexual differences.

Closely related to the next species, but easily known by the much stouter hind tibiae and the shorter first hind tarsal joint. The punctuation of the striae formerly regarded by me as of some value in separating the two species, is shown by the increase of material to be too variable a character to be depended upon.

Occurs from the Middle States to Missouri and Texas, also rarely in Massachusetts (Blanchard).

**A. stercorosus** Mels.—Form oblong, parallel, convex, rufo-testaceous, head and thorax darker, elytra often clouded, surface smooth, shining. Antennæ rufo-testaceous. Head convex, front not tuberculate, surface sparsely punctate ♀ or scarcely visibly punctate ♂. Clypeus truncate, very feebly emarginate, the sides arcuate, the genæ scarcely more prominent than the eyes. Thorax slightly narrowed in front, sides feebly arcuate, the hind angles distinct, but obtuse; base arcuate, without marginal line, disc convex, very sparsely punctate at middle, more coarsely toward the sides, the thorax of ♀ more coarsely punctate than the male. Elytra finely striate, very finely punctate ♂ or more distinctly punctate ♀, the intervals flat, smooth. Body beneath sparsely punctate, shining. Mesosternum finely carinate between the coxæ, opaque and finely alutaceous in front. Anterior tibiae punctate in front, tridentate externally, but scarcely visibly crenate above, the first joint of anterior tarsus longer than the second. Posterior tibiae slender, the first joint of the tarsus longer than the next three. Length .14-.18 inch; 3.5-4.5 mm.

Apart from the differences noted above no sexual differences have been observed.

With a close resemblance to the preceding species, the present has always a darker head and thorax, the sides of the latter again paler; the elytra are often clouded with darker color and when this is well marked the specimens may resemble *lividus*, which has equal spinules at the apex of the hind tibiae. In well preserved specimens the sides of the elytra near the apex are slightly pubescent.

Occurs over our entire territory east of the Mississippi as far north as Dakota.

Series **I-c.**

Head not tuberculate, or very feebly so. Mesosternum not carinate between the coxæ. Margin of thorax not explanate, usually with a basal marginal line. General color reddish, luteous, or yellowish testaceous, without any part being either piceous or black.

This series is more numerous in species than the preceding, and consequently less homogeneous. The following table will assist in their recognition:

Genæ at least moderately prominent .....	2.
Genæ not prominent beyond the eye .....	8.
2.—Large species (.30-.35 inch); punctures of thorax very coarse and irregularly scattered .....	3.
Smaller species (.16-.22 inch); punctures of thorax not unusually coarse, quite regularly scattered .....	4.
3.—Clypeus very obtusely rounded each side of the emargination; disc of thorax almost smooth at middle .....	<b>concevus.</b>
Clypeus subangulate each side; disc of prothorax irregularly punctate over entire surface .....	<b>rubidus.</b>
4.—Clypeus with a distinct denticle each side of emargination; basal marginal line of thorax distinct.	
Hind angles of thorax broadly rounded; punctures of the elytral intervals coarser than those of the striae .....	<b>militaris.</b>
Hind angles distinct, but obtuse; punctures of intervals not coarser than those of the striae .....	<b>æmulus.</b>
Clypeus not denticulate .....	5.
5.—Thorax not fimbriate at sides .....	6.
Thorax conspicuously fimbriate; species very pale testaceous; the upper tooth of anterior tibiæ very small .....	7.
6.—Base of thorax regularly arcuate, with distinct marginal line.	
Clypeus angulate each side of emargination; hind angles of thorax rectangular, slightly obtuse at tip; punctures of elytral intervals rather close, nearly as coarse as those of the striae .....	<b>rubiginosus.</b>
Clypeus with barely a trace of emargination, broadly rounded each side; hind angles of thorax obtuse, but distinct; intervals sparsely finely punctate .....	<b>consentaneus.</b>
Base of thorax irregular, without trace of marginal line; intervals of elytra with extremely few punctures .....	<b>luteolus.</b>
7.—Oblique ridges of hind tibiæ very distinct.	
Anterior tibiæ subtruncate, the apical tooth not much prolonged; elytra with short brownish lines .....	<b>phalerioides.</b>
Anterior tibiæ normal, the apical tooth much prolonged and very acute; elytra without lines .....	<b>Larrea.</b>
Oblique ridges of hind tibiæ obliterated; anterior tibiæ normal, the apical tooth much prolonged and very acute; thorax with distinct, but fine basal line; elytra not maculate .....	<b>parcus.</b>
8.—Genæ regularly narrowed from the anterior border of the eye to the front; disc of prothorax very smooth, a distinct basal marginal line; posterior tibiæ stout .....	<b>ægrotus.</b>

**A. concavus** Say.—Moderately elongate, pale reddish brown, shining. Antennæ a little paler. Head convex, not tuberculate, smooth, a few fine punctures posteriorly; clypeus broadly feebly emarginate, rounded each side of emargination, sides arcuate, fimbriate, genæ moderately prominent, but obtuse. Thorax nearly twice as wide as long, the sides feebly arcuate, nearly parallel posteriorly, more arcuate in front, margin not explanate, finely fimbriate, hind angles very obtuse, base arcuate, with feeble sinuation near the hind angles, a scarcely evident marginal line; disc moderately convex, with extremely fine punctures sparsely placed with larger punctures near the base and sides more widely distant. Elytra a little narrower at base than the thorax, humeri very obtuse, sides feebly arcuate, disc deeply striate, striæ finely punctured, intervals convex, smooth. Body beneath sparsely punctate, metasternum almost entirely smooth at middle. Mesosternum not carinate, coarsely punctured with a large smooth space at middle. Anterior tibiae smooth in front, strongly tridentate externally, not crenulate above, the first tarsal joint shorter than the second. Posterior femora with a line of coarse punctures near the knee, first joint of tarsus as long as the next three. Length .32-.34 inch; 8-8.5 mm.

In the male the anterior tibial spur is shorter and stouter, the upper middle tibial spur stouter than in the female. The thorax of the male has fewer coarse punctures at the sides and very few along the apical margin, while in the female a small central space on the disc is alone free of large punctures.

Occurs from Georgia to Missouri, Kansas and Colorado.

**A. rubidus** Lec.—Form moderately elongate and convex, pale reddish brown, shining. Antennæ slightly paler. Head moderately convex, obsolete tuberculate each side, surface sparsely punctate; clypeus broadly feebly emarginate, on each side distinctly angulate the sides arcuate and fimbriate, genæ moderately prominent, but obtuse. Thorax not twice as wide as long, the sides feebly arcuate and gradually narrowed to the front, margin not explanate, scarcely fimbriate, hind angles obtusely rounded, base regularly arcuate and with fine marginal line; disc moderately convex sparsely punctured with coarse and fine punctures intermixed, the punctures coarser and closer toward the sides. Elytra as wide at base as thorax, the humeri obtuse, sides feebly arcuate, disc moderately deeply striate, striæ closely and finely punctured, intervals convex smooth. Body beneath sparsely punctate. Mesosternum not carinate, coarsely punctured smoother at middle. Anterior tibiae smooth in front, tridentate externally, obsolete crenulate above, the first joint of tarsus shorter than the second. Posterior femora with a row of coarse punctures near the knee, the first tarsal joint not as long as the next three. Length .24-.36 inch; 6-9 mm.

The male has merely a shorter and stouter anterior tibial spur, the thoracic sculpture does not apparently differ in the sexes.

This species resembles *concavus* in size, color and general appearance, and may be distinguished, especially, by the angulation of the clypeus on each side of the emargination. There are other less conspicuous differences observable in the description.

Occurs in various parts of California, near San Francisco, at Alameda, in the southern coast range, Owen's Valley and in Arizona.

**A. *militaris*** Lec.—Form moderately elongate and parallel, pale reddish brown, shining. Antennæ pale. Head convex, a distinct tubercle on each side of vertex, densely and rather roughly punctured; clypeus subtruncate, feebly emarginate, with two small recurved teeth widely separated, sides arcuate and fimbriate, genæ feebly prominent, obtuse. Thorax equally wide at apex and base, sides feebly arcuate sparsely fimbriate, hind angles very broadly rounded, base regularly arcuate, with fine marginal line; disc convex, the punctures equal, moderately coarse, closely but not densely placed, denser at the sides. Elytra a little wider than the thorax, humeri obtuse, margin with short hairs, striate, striæ finely and closely punctured, intervals very slightly convex and with punctures coarser than those of the striæ, irregularly placed, with minute punctures intermixed. Body beneath sparsely and indistinctly punctate. Anterior tibiæ smooth in front, strongly tridentate externally, not crenulate above, first joint of tarsus shorter than the second. Posterior femora sparsely punctate, the first tarsal joint not as long as the next three. Length .20-.24 inch; 5-6 mm.

*Male*.—Anterior tibiæ sinuate on the inner side, the tibial spur entirely wanting, the apical tooth more slender and acute than usual. Upper spur of middle tibia shorter than the lower, but acute.

*Female*.—Anterior tibiæ normal, the spur small and acute, the apical tooth slender and long.

In this species the clypeal teeth are small and acute, and resemble the projecting tips of the labial palpi. The hind angles of the thorax are so broadly rounded that the sides and base are continuous without interruption. The intervals of the striæ had been described as densely punctulate, but the punctures are so minute as not to affect the polish of the surface. The mesosternum is not carinate, as the new and clean specimens now before me show, those previously examined in the cabinet of Dr. LeConte were not in good state.

The male sexual characters are unique, and while at least one other species has the front tibia sinuate on its inner side, this is the only one with the tibial spur absent.

Occurs in California from Siskiyou Co. (Fuchs) to San Diego (Lec.) and in Nevada.

**A. *æmulus*** n. sp.—Moderately elongate and convex, reddish brown, shining. Antennæ testaceous, club fuscous. Head moderately convex, slightly tuberculate each side, moderately densely and coarsely punctate, but not rugose; clypeus broadly, but feebly emarginate at middle; a small, slender, acute tooth each side, turned upward, a slight carina running backward from each tooth, sides of clypeus arcuate, sparsely fimbriate, genæ moderately prominent, subacute. Thorax slightly narrower in front, the sides feebly arcuate, hind angles distinct, but obtuse; base arcuate, on each side slightly oblique, a very fine submarginal line; disc moderately convex, punctuation moderately coarse, not

densely placed, closer near the sides, less dense in the male than in the female. Elytra a little wider than the thorax, sides parallel, humeri obtuse, moderately deeply striate, striae finely subrenately punctured, intervals slightly convex, sparsely irregularly punctulate, the punctures more distinct in the females. Body beneath sparsely punctate; mesosternum not carinate. Anterior tibiae smooth in front, strongly tridentate externally, distinctly crenate above, the first tarsal joint a little shorter than the second. Posterior femora sparsely punctate, the first tarsal joint not as long as the next three. Length .18-.22 inch; 4.5-5.5 mm.

*Male*.—Anterior tibial spur not more slender to tip, obtuse at apex. Upper spur of middle tibiae truncate at tip, the inner angle slightly prolonged internally. Thorax less closely punctured, elytral intervals less distinctly punctured.

*Female*.—Anterior tibial spur slender and acute, upper spur of middle tibia acute at tip.

This species so closely resembles *militaris* that I had supposed them identical until the examination of my material for the present paper began. The males can be distinguished at first glance by the anterior tibiae, but the hind angles of the thorax in the present species are well marked, although obtuse, and in this manner either sex may be distinguished from the preceding species.

Occurs in southern Arizona (Morrison).

**A. rubiginosus** Horn.—Moderately elongate, reddish brown, feebly shining. Antennae rufo-testaceous, club slightly darker. Head convex, front with three very faint tubercles, densely punctate, punctures coarser near the sides, the intervals distinctly alutaceous; clypeus broadly emarginate, subangulate each side, sides arcuate, margin not fimbriate, genae feebly prominent, obtuse. Thorax nearly twice as wide as long, not narrowed in front, sides feebly arcuate, margin not explanate, hind angles well defined, nearly rectangular, the tip slightly obtuse, base regularly arcuate with fine marginal line; disc convex, punctures coarse, moderately close, larger, but not denser near the side, intervals alutaceous. Elytra not wider at base than the thorax, humeri obtuse, sides feebly arcuate, striae fine, moderately impressed, the punctures fine and rather close, intervals feebly convex, moderately densely punctured, the punctures nearly as large as those of the striae. Body beneath sparsely punctate. Mesosternum not carinate. Anterior tibiae smooth in front, strongly tridentate externally and crenulate above, the first tarsal joint shorter than the second. Posterior femora sparsely punctate, the first tarsal joint a little shorter than the next three. Length .22 inch; 5.5 mm.

*Male*.—Anterior tibial spur rather long, acute at tip and strongly arcuate; upper spur of middle tibia acute at tip.

The middle and posterior femora are slightly fimbriate along their posterior edge, and this is probably sexual, but as I do not know the female the characters of this sex cannot be given. The three species—*militaris*, *amulus* and *rubiginosus*—very naturally group together, are very closely related and resemble each other, so that without careful examination they might be confused. The first two

have the two small clypeal denticles, but by accident these might be lost in some specimens; in this event the form of the hind angles of the thorax and the sculpture of the intervals of the elytra will distinguish them without reference to the male characters.

One specimen, Camp Grant, Arizona.

**A. consentaneus** Lec.—Moderately elongate, parallel, convex, yellowish testaceous, thorax and suture slightly darker. Antennæ pale. Head convex, without trace of tubercles, sparsely punctate, the middle of front almost deprived of them, intervals finely alutaceous; clypeus hemihexagonal, very feebly emarginate, angles broadly rounded, sides feebly arcuate, genæ slightly prominent, obtuse; margin not fimbriate. Thorax slightly narrowed in front, sides feebly arcuate, hind angles broadly rounded, base regularly arcuate, a fine marginal line, disc moderately convex, sparsely punctate over the entire surface, the intervals finely alutaceous. Elytra not wider than the thorax, humeri obtuse, sides very feebly arcuate, disc rather deeply striate, striæ finely crenately punctured, intervals convex, alutaceous, sparsely finely punctulate. Body beneath sparsely punctulate. Mesosternum not carinate. Anterior tibiæ smooth in front, strongly tridentate externally and crenate above, the first tarsal joint shorter than the second. Posterior femora very sparsely punctate, the first tarsal joint not as long as the next three. Length .18-.20 inch: 4.5-5 mm.

The male has the anterior tibial spur short, stout and strongly curved, and the thorax less distinctly punctate.

A very distinct species, but without any notable peculiarities. In color it resembles some of the forms of *lividus*, but here the resemblance ceases.

Occurs from Canada to Missouri, Kansas and New Mexico, but not common.

**A. luteolus** n. sp.—Moderately elongate, convex, smooth, shining, body beneath, head and thorax brownish or piceo-testaceous. Abdomen and elytra dirty yellow, femora yellowish testaceous, tibiæ slightly darker. Antennæ pale. Head convex, without trace of tubercles, surface alutaceous, smooth, a very few indistinct punctures posteriorly; clypeus very feebly emarginate in front, the angles broadly rounded, sides feebly arcuate, genæ very slightly prominent subacute, margin fimbriate. Thorax nearly twice as wide as long, slightly narrower in front, sides feebly arcuate, hind angles very obtuse, base arcuate at middle, then slightly sinuate, oblique near the hind angles, without trace of marginal line; disc moderately convex, sparsely indistinctly punctate, sides sparsely punctate. Elytra not wider than the thorax, moderately elongate, humeri obtuse, sides parallel, disc rather deeply striate, striæ crenately punctured, intervals convex, very sparsely indistinctly punctulate. Body beneath almost devoid of punctures. Mesosternum not carinate. Anterior tibiæ smooth in front, tridentate externally and crenate above, the first tarsal joint shorter than the second. Posterior femora almost entirely smooth, the first tarsal joint shorter than the next three. Length .20-.22 inch: 5-5.5 mm.



In the four specimens before me I observe no sexual differences, except that one specimen by its more slender form, more shining surface and less convex intervals, seems to be a male.

In general appearance the species resembles *consentaneus*, but is rather darker in color and differs especially in the irregular base of thorax without marginal line. It also resembles *obtusus* in form and color, and may be known by the equal spinules of the hind tibiae of that species as well as the basal marginal line, of which no traces exist in the present species.

Collected by Prof. F. H. Snow in New Mexico.

**A. phalerioides** Horn.—Elongate, moderately convex, pale yellowish testaceous, elytra with short fuscous stripes. Antennæ pale, club fuscous. Head convex, without trace of tubercles, surface very sparsely finely punctate; clypeus very feebly emarginate at middle, broadly rounded each side, the sides arcuate not fimbriate, genæ very slightly prominent, obtuse. Thorax slightly arcuately narrowing from the base, hind angles well defined, but obtuse; base arcuate, oblique near the hind angles, the marginal line faintly visible at middle, disc convex, surface very finely alutaceous, the punctures very sparsely placed, irregular in size and feebly impressed. Elytra a little wider than the thorax, humeri rounded, sides feebly arcuate, disc deeply striate, striæ closely finely punctured, intervals convex, finely alutaceous and with a row of very fine distant punctures: color pale yellowish testaceous with a fuscous stripe on the sixth interval one-third from base, a second more posteriorly on the fifth, another on the third, these sometimes confluent in an oblique stripe. Body beneath very sparsely punctate and alutaceous. Anterior tibiae smooth in front, the first tarsal joint shorter than the second. Posterior femora indistinctly, sparsely punctate, the first tarsal joint nearly as long as next three. Length .16-.20 inch; 4-5 mm.

*Male*.—Anterior tibiae slightly sinuous on the inner side, the upper tooth very feeble or almost absent. Intervals of elytra scarcely convex. Posterior tibiae slender.

*Female*.—Anterior tibiae straight on the inner side, the upper tooth small, but well marked. Intervals of elytra convex. Posterior tibiae stouter than in male.

In both sexes the anterior tibia at apex is nearly truncate, the apical tooth not prolonged anteriorly. The tibial spur is also small and inconspicuous. In facies the species resembles a small *Phaleria testacea*.

Occurs at Coney Island, N. Y., and at Atlantic City, N. J., living in regions where the sand is especially white.

**A. Larreae** n. sp.—Moderately elongate, subdepressed, parallel, pale yellowish testaceous, surface with greasy lustre. Antennæ pale. Head paler, darker along the thoracic margin, front not tuberculate, feebly convex, very sparsely minutely punctate and finely alutaceous: clypeus impressed at middle and with a deep oval emargination in ♂, or moderately and more broadly emarginate ♀, the angles each side very obtuse, the margin distinctly reflexed, sides arcuate,

slightly sinuate, genæ slightly prominent and very obtuse. Thorax very little narrower in front, the sides arcuate, the margin sparsely fimbriate, hind angles very obtuse, base regularly arcuate without marginal line; disc moderately convex, sparsely minutely punctate at middle, the punctures larger and more numerous near the sides. Elytra not wider at base than the thorax, sides very feebly arcuate, humeri obtuse, margin sparsely fimbriate; disc finely striate, striae finely, but not closely punctate, intervals slightly convex, finely alutaceous, with fine punctures sparsely placed. Body beneath and abdomen sparsely, indistinctly punctate, finely alutaceous. Anterior tibiae smooth in front, tridentate externally, the upper tooth small, not crenulate above, the first four tarsal joints equal in length. Posterior femora alutaceous, a few coarse punctures posteriorly, the first tarsal joint not as long as the next three, the oblique carinae of the tibia feeble. Length .16-.18 inch; 4-4.5 mm.

*Male*.—Spur of anterior tibia cultriform, the inner edge of tibia somewhat sinuous. Clypeus deeply and rather narrowly emarginate.

*Female*.—Inner edge of anterior tibia straight, the spur slender, curved, acute. Clypeus more broadly and less deeply emarginate.

Although inconspicuous in size this species is remarkable in having a very deep emargination of the ♂ clypeus with the angles reflexed. In some specimens the marginal line of the base is slightly distinct, and in this case the very pale color and other details will enable the species to be separated from those which precede.

Taken at El Paso, Texas, on the flowers of *Larrea mexicana* by Mr. G. W. Dunn.

**A. parvus** n. sp.—Form rather elongate, slightly broader posteriorly, moderately convex, pale yellowish testaceous shining. Head feebly convex, front without trace of tubercles, finely alutaceous, but more shining ♂, very sparsely finely punctate ♂, very little more coarsely ♀. Clypeus subtruncate ♂, very feebly emarginate ♀, the angles rounded, sides arcuate, genæ feebly prominent, obtuse. Thorax very nearly twice as wide as long, distinctly narrower in front, sides fimbriate with moderately long hairs, arcuate, the hind angles entirely obliterated by the regular curve of the sides to the base, the latter arcuate, with very feeble sinuation each side of middle, the marginal line fine, but distinct; disc feebly convex, alutaceous, the punctuation fine and sparse, more distinct in the female, the punctures in front extremely fine. Elytra as wide at base as the thorax, humeri distinct, but obtuse; the striae deep, obsoletely punctate, the intervals convex, with a single series of fine punctures, the surface alutaceous, but more shining in ♂. Mesosternum alutaceous, opaque. Metasternum and abdomen with very few fine punctures, surface shining. Anterior tibiae smooth in front, tridentate externally, the upper tooth very small, but more distinct in ♀, the apical tooth unusually long and acute, first tarsal joint as long as the second. Posterior femora with a row of distant obsolete punctures near the hind border, first tarsal not quite as long as the next three. Length .12 inch; 3 mm.

No sexual differences have been observed other than those noted above.

A small species resembling in form and color the members of Group K, but without the roughly sculptured head and the transverse clypeal plica. It is, however, very closely allied to the two preceding species.

Two specimens from eastern Florida, one of which was kindly given me by Mr. H. Ulke.

**A. agrotus** Horn.—Form less elongate, robust, convex, pale castaneous, shining. Antennæ pale. Head convex, front not tuberculate, surface sparsely and extremely finely punctulate; clypeus broadly, but feebly emarginate, the angles on each side distinct, but not prominent, the sides arcuate, the genæ not more prominent than the eye. Thorax twice as wide as long, slightly narrowed in front, sides feebly arcuate, hind angles distinct, but very obtusely rounded, base arcuate and with a fine marginal line; disc convex with extremely minute, sparse punctures, and with one oval group of coarse punctures midway between the middle and sides. Elytra as wide at base as thorax, oval, sides arcuate, disc finely striate, striae finely punctured, intervals flat, with very minute and indistinct punctures. Body beneath sparsely coarsely punctate. Anterior tibiæ smooth in front, strongly tridentate externally and crenate above, the first tarsal joint longer than the second. Posterior femora stout, sparsely punctate, the tibia stout; first tarsal joint as long as the next three. Length .12-.18 inch; 3-4.5 mm.

*Male*.—Anterior tibial spur not more slender to apex, the tip obtuse.

*Female*.—Anterior tibial spur slender and acute.

In the latter sex the fine punctures of the disc of the thorax are more distinct and (in the unique) the group of coarse punctures is absent. This may possibly be a permanent sexual character. The form of this species is more robust than usual in the genus. It is remarkable in not having the genæ more prominent than the eye.

Occurs in Florida and North Carolina.

#### Series I-d.

Head sometimes distinctly tuberculate or without trace of tubercles. Thorax not explanate at sides, the basal marginal line usually distinct. Anterior tibiæ smooth in front. Mesosternum without carina (except very feebly in *inquinatus*). Color in great part picceous, the head and thorax always so, although at times pale at the sides; elytra variable in color, black, picceous, dull red or yellowish and maculate.

This series is more heterogeneous than any of those which precede, as it contains those species which render inapplicable any division based on the tuberculate or non-tuberculate head.

The following table will assist in the recognition of the species:

- Clypeus denticulate or angulate each side of middle ..... 2.  
 Clypeus broadly emarginate at middle, very obtusely rounded each side. .... 4.  
 Clypeus almost exactly semicircular..... 7.  
 2.—Clypeus with a small acute tooth each side of the extremely feeble emargination; above the middle of the margin of the clypeus a finely elevated angulate line. .... **dentiger.**  
 Clypeus broadly emarginate at middle, distinctly angulate each side.....3.  
 3.—Elytra entirely piceous.  
     Body beneath and legs piceous ..... **coloradensis.**  
     Body beneath and legs pale yellow; elytra often with the alternate intervals having small red spots ..... **bicolor.**  
     Elytra dull red, intervals strongly convex at apex, the ninth elevated in its entire length..... **luxatus.**  
     Elytra yellow, maculate with black; sides of thorax somewhat paler. **serval.**  
 4.—Thorax with the front angles always paler, often the entire side and a portion of the head also.....5.  
     Thorax entire black as well as the head ..... 6.  
 5.—Basal marginal line of thorax distinct.  
     First joint of posterior tarsus longer than the next two.  
     Head entirely black; thorax very little paler at the sides; elytral spots tending to form stripes..... **inquinatus.**  
     Head and thorax always paler at the sides.  
     The inner striæ of elytra joining the outer at apex; ground color of elytra pale yellow as in *inquinatus*; punctuation of thorax rather sparse and irregular..... **pardalis.**  
     The inner three striæ entire not confluent with the outer striæ; ground color of elytra reddish yellow; punctuation of thorax moderately close ..... **leopardus.**  
     First joint of posterior tarsus very little longer than the second; thorax with extremely few punctures; elytra dull red; species small. **inutilis.**  
     Basal marginal line of thorax entirely wanting, the punctures of disc moderately coarse and evenly disposed; elytra pale reddish yellow, the sutural interval and an oblique band on each side piceous; species small, 3 mm. .... **pumilus.**  
 6.—Elytra black, apex dull red, intervals flat; punctures of thorax equal, rather sparse ..... **terminalis.**  
     Elytra dull red, varying to nearly black, in the latter case the apex is not paler; intervals convex; punctures of thorax intermixed. **cruentatus.**  
 7.—Subdepressed; thorax without basal marginal line, the punctures of the disc moderately close and somewhat unequal..... **depressus.**  
     Moderately convex; thorax without basal marginal line, the disc almost entirely smooth, the lateral margin conspicuously thickened. **rufipes.**

Three of the species of this group are quite common in Europe,—*rufipes*, *depressus* and *inquinatus*. It is not yet certain that the first two are fairly established, but the latter is here to stay.

**A. dentiger** Lec.—Moderately elongate, broader posteriorly, piceous, shining. Antennæ piceous, club ferruginous. Head moderately convex, coarsely sparsely punctate, slightly rugose laterally, front not tuberculate; clypeus deflexed at middle, the margin truncate, an elevated angulated line close to the margin, on each side a small acute tooth, the sides strongly arcuate, with short fimbriae, genæ moderately prominent, but very obtuse. Thorax twice as wide as long, slightly narrower in front, the sides feebly arcuate, hind angles broadly rounded, base regularly arcuate with submarginal line; disc moderately convex, coarsely not closely punctate, except at the angles, a distinct, smooth, median line posteriorly. Elytra as wide at base as the thorax, humeri distinct, slightly dentiform, sides arcuate, disc finely striate, punctures elongate, but not close, intervals flat, irregularly biserially punctulate. Body beneath paler in color, sparsely indistinctly punctate. Mesosternum opaque, not carinate. Anterior tibiae smooth in front, strongly tridentate externally and crenate above, the first tarsal joint shorter than the second. Posterior coxæ sparsely coarsely punctate, the first tarsal joint as long as the next three. Length .24-.26 inch; 6-6.5 mm.

*Male*.—Anterior tibial spur arcuate, the tip suddenly bent. Upper spur of middle tibia short, obtuse, emarginate at tip.

*Female*.—Anterior tibial spur more slender, not flexed at tip. Middle tibial spurs acute.

In the unique female the clypeal teeth are not prominent and acute, possibly by abrasion, and as this may lead to the suggestion that the species may belong to the following category, it may be observed that the elevated angulate line immediately behind the middle of the clypeal margin is quite characteristic.

Occurs in southwestern Texas, also in Arizona.

**A. coloradensis** Horn.—Oblong, a little broader posteriorly, piceous, shining. Antennæ rufotestaceous. Head piceous, margins brownish, moderately convex, front not tuberculate, sparsely punctate, clypeus broadly emarginate, on each side angulate, the sides arcuate, genæ moderately prominent, subacute. Thorax slightly narrowed anteriorly, sides feebly arcuate, hind angles distinct, but obtuse; base arcuate, on each side oblique near the hind angles, marginal line fine, but distinct; disc moderately convex, coarsely sparsely punctured with a few fine punctures intermixed. Elytra as wide at base as the thorax, humeri obtuse, sides feebly arcuate, disc moderately deeply striate, striae indistinctly punctured, intervals slightly convex, sparsely punctulate. Body beneath sparsely indistinctly punctate. Mesosternum sparsely punctate, not carinate. Anterior tibiae smooth in front, tridentate externally and distinctly crenate above, the first tarsal joint shorter than the second. Posterior femora with a line of coarse punctures posteriorly, the first tarsal joint a little longer than the next two. Length .26-.30 inch; 6.5-7.5 mm.

*Male*.—Spur of anterior tibia stout and strongly arcuate, upper spur of middle tibia slightly hooked at tip.

*Female*.—Spurs slender and acute.

The angulation of the clypeus is strongly marked in some specimens, and even reflexed, forming a tooth. This species and *dentiger*

closely resemble each other in form and color, and may be known by the clypeus being more impressed in the latter species and with the elevated angulate line behind its margin. In well marked specimens of either the presence of the slender teeth on either side of the middle truncation of *dentiger*, or the broadly emarginate and acutely angulate clypeus of *coloradensis* will easily separate them.

Occurs in Colorado.

**A. bicolor** Say.—Oblong, slightly wider posteriorly, subdepressed, piceous shining, elytra often with round reddish yellow spots on the alternate intervals often more or less confluent at base, metasternum, abdomen and legs pale yellow. Antennæ testaceous, the club darker. Head rather densely, moderately coarsely punctured, front without tubercles; clypeus broadly emarginate, the angles well marked, sides feebly arcuate, the genæ very little prominent, obtuse. Thorax nearly twice as wide as long, slightly narrower in front, sides feebly arcuate, hind angles broadly rounded, base arcuate with distinct marginal line, disc convex, moderately closely punctate, the punctures somewhat unequal, denser and coarser near the sides. Elytra as wide at base as the thorax, humeri distinct, disc rather deeply striate, striæ crenately punctured, intervals convex, sparsely irregularly punctate. Body beneath sparsely indistinctly punctate. Anterior tibiæ smooth in front, tridentate externally and crenulate above, the first tarsal joint very short, the second as long as the next two together. Posterior femora sparsely finely punctate, the first tarsal joint as long as the next three. Length .18-.24 inch; 4.5-6 mm.

*Male*.—Anterior tibial spur inserted opposite the upper tibial tooth. Thorax less densely punctured. Middle and posterior femora fimbriate posteriorly, the posterior tibiæ sparsely fimbriate on the inner side.

*Female*.—Anterior tibial spur inserted opposite the middle tooth. Thorax more obviously narrowed in front and more densely punctured. Legs not fimbriate.

The vast majority of specimens of this species are entirely black above, but individuals are not rare in which the alternate intervals beginning with the third have small round reddish yellow spots, sometimes the base and scutellar region are pale.

The length of the second joint of the anterior tarsus seems rather an unusual character, and it has not been observed in any other species that the anterior tibial spur of the male is inserted so far distant from the apex.

Occurs from Can. to Tex., rarely in Massachusetts (Blanchard).

**A. luxatus** n. sp.—Oblong, slightly broader posteriorly, piceous nearly black, elytra dull red, legs brownish, surface feebly shining. Antennæ testaceous, club darker. Head moderately convex, without frontal tubercles, surface finely alutaceous, rather closely coarsely punctured posteriorly, more coarsely punctate at sides, at middle more finely punctate; clypeus broadly emarginate,

the angles sharply prominent, sides arcuate, sparsely fimbriate, genæ very little prominent, obtuse. Thorax twice as wide as long, very little narrowed in front, sides feebly arcuate and slightly undulated, the margin in front very narrowly explanate, hind angles distinct, but obtuse; base regularly arcuate with distinct marginal line; disc convex, coarsely, closely and very regularly punctate over the entire surface. Elytra a little narrower at base than the thorax, humeri distinctly dentiform, sides feebly arcuate, disc moderately deeply striate, the striae rather broad and catenulately punctured, intervals feebly convex at base, costiform at apex, the ninth interval costiform from the humeral umbone to apex, the intervals very distinctly alutaceous, irregularly biserially punctulate. Body beneath sparsely indistinctly punctulate. Mesosternum coarsely punctate, not carinate. Anterior tibiæ smooth in front, tridentate externally, obsolete crenulate above, the first tarsal joint shorter than the second. Posterior femora sparsely punctate, the first tarsal joint as long as the next three. Length .14 inch; 3.5 mm.

*Male.*—Anterior tibial spur stout, truncate at tip. Upper spur of middle tibia somewhat cultriform, broad with the tip prolonged inward.

*Female.*—Tibial spurs slender and acute.

The elytral characters alone are sufficient to enable the species to be readily recognized. It is the only one known to me in our fauna with the intervals so decidedly elevated at apex and with the ninth elevated in its entire extent. The dull red elytra, the angulate clypeus and the closely punctured thorax are additional characters of easy recognition.

Occurs in the southern part of California (Ulke) and in Arizona.

**A. serval** Say.—Form moderately elongate, parallel, piceous, elytra yellow maculate, legs reddish brown. Antennæ rufo-testaceous, club darker. Head piceous, the margins paler, translucent, front faintly trituberculate, surface coarsely punctured, the middle of front smoother; clypeus emarginate at middle, the angles distinct, sides oblique, slightly sinuate, genæ moderately prominent, obtuse. Thorax nearly twice as wide as long, sides nearly parallel, arcuate near the front angles, the hind angles distinct, slightly obtuse, base arcuate, marginal line distinct, disc convex, piceous, the sides brownish, surface with an intermixed punctuation, coarser near the base and sides, moderately closely placed. Elytra a little narrower at base than the thorax, humeri distinct, sparsely dentiform, disc finely striate, the striae not closely punctured, intervals flat, very sparsely indistinctly punctulate, color yellowish, the side margin and apex slightly reddish, maculate with black spots arranged in a semi-circle from the base of the fifth interval, another arcuate row of spots on the declivity, a few near the apex and a rather broad lateral stripe. Body beneath indistinctly punctate. Mesosternum coarsely punctate, not carinate, opaque at middle. Anterior tibiæ smooth in front, tridentate externally and crenate above, the first tarsal joint shorter than the second. Posterior femora sparsely punctulate, the first tarsal joint nearly as long as the next three. Length .18 inch; 4.5 mm.

*Male.*—Anterior tibial spur long, scarcely more slender to tip; apex obtuse.

*Female.*—Spur slender, acute, shorter.

The male anterior tibial spur is prolonged much beyond the apical tooth reaching nearly the tip of the third tarsal joint, in the female it barely reaches the tip of the second joint.

From the style of marking and color of elytra this species should be associated with *pardalis* and *inquinatus* and was so placed at the time when the frontal tubercles could be used as a means of separating groups, but this character has ceased to be of any importance and its use has already been the means of some misunderstanding.

Occurs from the Middle States to Texas.

**A. inquinatus** Herbst.—Oblong, convex, black, shining, elytra yellowish with black spots and vittæ, thorax with anterior angle often the entire side pale, femora yellowish, tibiæ darker. Antennæ piceous, club nearly black. Head entirely black, front trituberculate, disc sparsely punctate, the sides more densely and somewhat rugulose; clypeus very feebly emarginate, the angles broadly rounded, the sides arcuate, genæ feebly prominent, obtuse. Thorax convex, slightly narrower in front, sides arcuate, hind angles distinct, but obtuse, base arcuate with fine marginal line, disc convex variably punctate in the sexes. Elytra parallel, humeri distinct, but obtuse; disc striate, striæ finely crenately punctured, intervals feebly ♂ or more ♀ convex, with extremely fine punctures near the striæ; color yellow, with two sub-basal spaces of irregular shape on each elytron, another posteriorly, one-third from apex, a lateral stripe piceous, these often more or less confluent. Body beneath sparsely punctate, the abdomen alutaceous. Mesosternum alutaceous, opaque, an extremely fine carina between the middle coxæ. Anterior tibiæ smooth in front, strongly tridentate externally and crenate above, the first tarsal joint distinctly shorter than the second. Posterior femora sparsely punctate, alutaceous, the first joint of hind tarsus not as long as the next three. Length .18-.22 inch; 4.5-5.5 mm.

*Male*.—Head rather sparsely punctate. Middle tubercle of front more prominent. Thorax wider than the elytra and very convex, scarcely perceptibly punctate at middle a few punctures near the side. Metasternum feebly concave, finely sparsely hairy. Spur of anterior tibia stout, feebly curved, acute at tip.

*Female*.—Head more densely punctate. Middle tubercle not prominent. Thorax not wider than the elytra and less convex, the surface sparsely, but distinctly punctate everywhere. Metasternum flat. Anterior tibial spur more slender.

This species is so well known that it is hardly necessary to enter into any detailed description of the style of markings, the spots are, however, variable in size, and often more or less confluent, while they preserve the general type above described. Many details of variation have been described by Erichson (*Ins. Deutsch.* iii, p. 841), to which those specially interested are referred.

This species has been introduced from Europe, and is widely diffused over our territory east of the Rocky Mountains. I have not yet seen it from the Pacific region.



**A. pardalis** Lec.—Moderately elongate and convex, parallel, piceous, shining; head in great part, sides of thorax, legs and elytra yellow, the latter maculate with black spots. Antennæ testaceous, club fuscous. Head convex, very plainly trituberculate ♂, or feebly so ♀, surface coarsely and densely punctured ♀ or more coarsely and less densely ♂; front hemi-hexagonal, the clypeus very feebly emarginate with rounded angles, the genæ feebly prominent and obtuse. Thorax nearly twice as wide as long and not narrower in front ♂, or less wide and slightly narrowed in front ♀, the sides strongly arcuate ♂, or feebly arcuate ♀, the hind angles distinct, but obtuse; the base broadly arcuate, basal marginal line distinct, disc convex, sparsely finely punctured, the punctures a little coarser toward the side, more evident in the ♀; color piceous, the sides rather broadly yellow. Elytra narrower than thorax ♂ or wider ♀, moderately deeply striate, striæ crenately punctured, intervals slightly convex and sparsely punctulate, the punctures very distinct ♀, or scarcely so ♂; color pale yellow with piceous spots arranged in a design as follows: a small spot at base of fifth interval, others on the intervals 3-4-5 forming a semi-circle, the intervals 7-8 with a broad stripe extending from the humeral umbone three-fourths to apex, and with other spots between the end of this stripe and the suture. Body beneath sparsely, indistinctly punctate. Mesosternum opaque and alutaceous at sides with an oval smoother space at middle, not carinate between the coxæ. Anterior tibiæ smooth in front, tridentate externally, obsoletely crenate above, the first tarsal joint shorter than the second. Posterior femora alutaceous, sparsely punctate, the first tarsal joint nearly as long as the next three. Length .22 inch; 5.5 mm.

*Male*.—Head almost entirely yellow, merely the occiput and a median oval space piceous, the front distinctly tuberculate, the median tubercle quite prominent. Spur of anterior tibia rather stout, feebly curved. Upper spur of middle tibia truncate, its inner angle prolonged inward.

*Female*.—Head piceous, the lateral and apical margins paler, front barely perceptibly tuberculate. Spur of anterior tibia more slender, the upper spur of middle tibia acute.

The elytral markings in this species are far less variable than in *inquinatus*, and form a very different design. This is one of the species which makes it unadvisable to use the frontal tubercles as a means of separating groups as the female is almost entirely devoid of them.

Occurs on the Pacific coast from San Francisco to Vancouver. I have seen one in the cabinet of the late Mr. Wilt marked Filmore, Nebraska.

**A. leopardus** Horn.—Oblong, slightly broader posteriorly, dark brownish, entire margin of head and sides of thorax paler, elytra dark reddish yellow, indistinctly maculate, legs rufo-testaceous. Antennæ pale. Head moderately convex, front indistinctly tuberculate, surface coarsely sparsely punctured. Clypeus hemihexagonal, feebly emarginate in front, the angles rounded, genæ moderately prominent, but obtuse. Thorax nearly twice as wide as long, slightly narrowed in front, the sides feebly arcuate, hind angles distinct, but obtuse; base arcuate with fine marginal line, disc convex, coarsely rather sparsely punctate over the entire surface with finer punctures intermixed. Elytra as wide at base

as the thorax, humeri obtuse: disc moderately deeply striate, striae crenately punctured, intervals slightly convex, very minutely sparsely punctate. Body beneath sparsely, abdomen more closely punctate. Mesosternum alutaceous and sparsely punctate. Anterior tibiae smooth in front, tridentate externally and crenate above, the first tarsal joint shorter than the second. Posterior femora very sparsely punctate and finely alutaceous, the first tarsal joint nearly as long as the next three. Length .26-.28 inch: 6.5-7 mm.

*Male*.—Spur of anterior tibia stout, strongly arcuate.

*Female*.—Spur slender and feebly arcuate.

This species is larger than either of the preceding with maculate elytra, and is not as dark in color on the thorax or beneath. The inner three striae reach the tip of the elytra and are not united with the outer striae.

The maculation of the elytra is never distinct, but it presents the same style as has been described for *pardalis*. The same style of arrangement of darker spaces may be observed in *aleutus*, in which, however, they are more diffused.

Occurs in Maine and eastern Canada.

**A. inutilis** n. sp.—Oblong, moderately robust, piceous, sides of thorax paler, elytra dull red, legs yellowish. Antennae pale, the club darker. Head moderately convex, sparsely punctate, front not tuberculate, but with the frontal suture slightly elevated; clypeus hemihexagonal, very feebly emarginate in front with rounded angles, the genae scarcely prominent, very obtuse. Thorax convex, slightly narrowed in front the sides feebly arcuate, hind angles very obtuse, base arcuate, with fine marginal line, disc sparsely finely punctate with coarser punctures intermixed along the base and at the sides. Elytra a little wider at base than the thorax, humeri distinct, sides parallel, striae moderately deep and rather coarsely crenately punctate, the intervals slightly convex with a single series of very fine punctures. Body beneath very indistinctly punctate, abdomen rather coarsely punctate at the sides. Mesosternum opaque and strigose at middle, coarsely punctate at sides, not carinate between the coxae. Anterior tibiae smooth in front, strongly tridentate externally, but not crenate above, the first tarsal joint shorter than the second. Posterior femora with extremely few punctures, the first four tarsal joints decreasing gradually in length, the first being shorter than the next two together. Length .14 inch; 3.5 mm.

The two specimens before me have the anterior tibial spur slender and acute, they are probably females.

This species is small and inconspicuous in its characters, those given in the table are the more conspicuous. The comparative shortness of the first joint of the hind tarsus will readily distinguish the species from any other in the group.

Occurs at San Francisco, Cal., and in Oregon.

**A. pumilus** n. sp.—Oblong, convex, parallel, piceous or nearly black, side of thorax indefinitely paler, elytra yellowish, the sutural interval, oblique stripe, lateral space and subapical spot piceous, legs yellowish testaceous. Antennae tes-

taceous with darker club. Head convex, without trace of frontal tubercles, coarsely punctate, less densely at middle of clypeus and very closely at the sides; clypeus very broadly and feebly emarginate, the angles broadly rounded, the sides feebly arcuate, genæ feebly prominent, obtuse. Thorax twice as wide as long, narrower in front, the sides very feebly arcuate, the hind angles distinct, but obtuse; base arcuate, without marginal line, disc convex, the punctures relatively coarse and equal and very evenly disposed over the entire surface, scarcely closer at the sides. Elytra as wide at base as thorax, humeri distinct, sides parallel, the striæ not deep, but moderately coarse and close, the intervals flat, very distinctly biserially punctate. Metasternum at sides with a few coarse punctures, abdomen indistinctly punctate, Mesosternum opaque and alutaceous, an oval smoother space at middle, not carinate between the coxæ. Anterior tibiæ smooth in front, tridentate externally and denticulate above, the first tarsal joint shorter than the second. Posterior femora sparsely punctate, the first tarsal joint as long as the next three. Length .12 inch; 3 mm.

The unique before me is probably a male, it has the interior tibial spur rather stout and slightly arcuate. The elytra are very distinctly marked. The sutural interval is piceous. The oblique stripe of the disc is rather broad, begins behind the humeral umbone, extends two-thirds to apex, ends obtusely, its inner edge reaching the second stria. The subapical spot is posterior to the end of the oblique band. At the side the piceous space is adjacent to the margin and is not of great extent.

This is the smallest genuine *Aphodius* in our fauna, and remarkable in its very distinct and relatively coarse sculpture for so small a species. The absence of a basal marginal line in a species in this part of the series is remarkable.

One specimen from New Mexico.

**A. terminalis** Say.—Oblong oval, moderately convex, black, shining, apex of elytra reddish brown. Antennæ and palpi piceous. Head convex, without trace of tubercles, coarsely punctate, slightly rugose at sides and in front. Clypeus hemihexagonal, feebly emarginate in front, the angles obtuse, sides very feebly arcuate, genæ feebly prominent, rounded. Thorax convex, slightly narrower in front, sides nearly straight posteriorly and slightly convergent anteriorly, in front feebly arcuate, hind angles nearly rectangular, somewhat obtuse, base arcuate and with distinct marginal line, disc convex, very sparsely finely punctured at middle, punctures coarser and closer toward the sides, especially near the front angles. Elytra as wide at base as at the thorax, humeri distinct, but obtuse; striæ fine, but moderately deep; punctures close, not coarse; intervals very flat, indistinctly biserially punctulate. Mesosternum very opaque, not carinate between the coxæ. Metasternum opaque, subgranulate. Abdomen more shining, alutaceous, sparsely indistinctly punctate. Anterior tibiæ smooth in front, tridentate externally, crenate above, the first tarsal joint shorter than the second. Posterior femora coarsely sparsely punctate, the first tarsal joint shorter than the next three. Length .16-.20 inch; 4-5 mm.

*Male*.—Anterior tibial spur long, arcuate, not more slender to tip, extending beyond the apical tooth and the second tarsal joint.

*Female*.—Anterior tibial spur more slender to tip, less arcuate, and shorter than in the male. Thorax more distinctly punctured at middle.

This species although shining seems to connect the present series with the *lutulentus* group by its general form and the very flat elytral intervals. The angles of the clypeus are less broadly rounded than in the adjacent species, although not angulate as in *bicolor*, etc. The reddish brown space at the apices of the elytra is always present, although it varies not only in size, but also in distinctness.

Occurs from the Middle States to Kansas and Texas.

**A. cruentatus** Lec.—Oblong oval, moderately convex, piceous or black; elytra dull red, nearly as in *finetarius*, varying to piceous, legs dark brown to black. Antennæ brownish, club piceous. Head moderately convex, front indistinctly trituberculate, surface moderately coarsely not closely punctured. Clypeus hemihexagonal, broadly feebly emarginate in front, the angles very obtuse, sides feebly arcuate, genæ moderately prominent, but obtuse. Thorax twice as wide as long, less obviously so in the female, slightly narrower in front, the sides feebly arcuate from base to apex, hind angles distinct, but rounded; base regularly arcuate, the marginal line fine, but entire: disc moderately convex, the punctuation not dense, intermixed, a little closer at the sides. Elytra a little wider than the thorax, humeri distinct, but obtuse; striæ moderately deep, relatively finely punctate, intervals slightly convex, indistinctly biserially punctulate. Mesosternum opaque and alutaceous, smoother at middle. Metasternum opaque and alutaceous, smoother at middle. Metasternum sparsely punctate at the sides. Abdomen indistinctly punctate. Anterior tibiæ smooth in front, tridentate externally, indistinctly crenate above, first tarsal joint shorter than the second. Posterior femora very sparsely punctate, the first tarsal joint nearly as long as the next three. Length .22-.30 inch; 5.5-7.5 mm.

*Male*.—Frontal tubercles rather more distinct. Thorax broader, more convex, at middle less punctate. Anterior tibial spur stout and moderately curved.

*Female*.—Frontal tubercles feeble. Thorax narrower, less convex and more punctate. Anterior tibial spur slender, less arcuate.

This species was described by Dr. LeConte from a single specimen, and some of the characters given by him are purely individual. The series before me consists of twenty specimens selected from a large number collected by Mr. A. S. Fuller, in New Mexico, and by Morrison in Arizona. Two varieties may be indicated—those with dull red elytra and those entirely black, with, however, all the intermediates in color without any differences of form or sculpture. I am informed by Mr. H. W. Bates that the black forms from Arizona have been distributed by Morrison as *ursinus*, which they resemble in a general way, but differ especially in the unequal spinules of the tibiæ. The forms with red elytra resemble *rubripennis*, which, however, differs in many ways.

Occurs in Arizona and New Mexico.

**A. rufipes** Linn. Oblong, moderately elongate, parallel, piceous to reddish brown, shining. Antennæ and palpi reddish brown. Head feebly convex or slightly elevated at middle of front ♀, surface very smooth with excessively fine punctures, others slightly more distinct toward the sides. Clypeus almost semi-circular, without trace of emargination, the genæ prominent, subacute. Thorax twice as wide as long, slightly narrowed in front, sides with short fimbriae, feebly arcuate, the extreme lateral margin thickened, hind angles obtusely rounded, base regularly arcuate without trace of marginal line, disc moderately convex, almost entirely smooth, with a few punctures along the sides, especially near the anterior and posterior angles. Elytra as wide at base as the thorax, humeri obtuse, sides parallel, striæ moderately deep, finely punctured, intervals slightly convex, sparsely very finely punctulate. Mesosternum coarsely punctate, an opaque space on each side. Metasternum at sides and abdomen sparsely punctate. Anterior tibiæ smooth in front, tridentate externally, serrate above, the first tarsal joint longer than second. Posterior femora sparsely punctulate, with an impressed line posteriorly formed of closely placed punctures, the first tarsal joint a little longer than the next three. Length .42-.50 inch; 11-13 mm.

*Male*.—Head evenly convex. Thorax a little broader than the elytra and less convex. Metasternum slightly longitudinally impressed.

*Female*.—Head with a slightly greater convexity at middle. Thorax not wider than the elytra.

This species will be readily known by its large size, semicircular head, thickened thoracic border, and the comparatively smooth surface of the entire body.

Three specimens are known to have been taken in our country, two by Mr. H. Ulke at Deer Park, Maryland, attracted by light at night, and another has been seen by Dr. Hamilton captured in southern Pennsylvania. The occurrence of a comparatively common European species in such an inland and comparatively wild region without having even been found about commercial centres leads to the belief that it may be indigenous to the region and not introduced. A parallel case may be cited in *Nomius pygmaeus*, which occurs very rarely in southern Europe, and at times abundantly in the Lake Superior region.

**A. depressus** Kug.—Oblong oval, moderately convex, black, moderately shining (elytra sometimes red). Antennæ piceous, the club black, palpi piceous. Head moderately convex, moderately finely not closely punctate, front without trace of tubercles. Clypeus semicircular, without trace of emargination the genæ prominent and arising rectangularly in front of the eye. Thorax not quite twice as wide as long, distinctly narrowed in front, the sides nearly straight posteriorly, arcuate in front, hind angles rounded, base arcuate without trace of marginal line; disc moderately convex, the punctures moderate in size and nearly equal, closely, but not densely placed. Elytra as wide at base as the thorax, humeri obtuse, disc striate, the striæ rather closely punctate, intervals feebly convex, confusedly, but not closely punctate. Mesosternum alutaceous, but feebly shining. Metasternum at middle shining, coarsely sparsely punctate, at sides opaque, less

distinctly punctate. Abdomen feebly shining, sparsely punctate. Anterior tibiae smooth in front, tridentate externally and crenate above, the first tarsal joint longer than the second. Posterior femora with an entire row of very coarse punctures near the posterior border and others nearly as coarse anteriorly, the first tarsal joint a little longer than the next three. Length .34 inch; 8.5 mm.

The specimen before me is a female, and has the spur of the anterior tibia acute.

The specimen referred to *depressus* varies from the descriptions in having the elytra slightly opaque near the apex, but without any trace of pubescence as in *lividus*. The first three elytral striae are entire, the fourth curves to join the sixth, the latter prolonged, gradually becoming effaced near the apex. The unique before me belongs to the variety described by Erichson as *atramentarius*, and from the careful discussion of the relation of this with the true *depressus* by Baron Harold (Ann. Fr. 1862, p. 301) the reference of my specimen to this species is made. In a male specimen, from Europe, just sent me by Dr. Hamilton, I observe that the slight variation alluded to is purely sexual, the male being more shining, while the thorax is less closely punctate.

One specimen, New York, given me by Mr. Aug. Merkel. I have not heard of any other specimens, and it is barely possible that this may be an accidental introduction.

#### GROUP K.

Scutellum small. Head convex, not trituberculate, but very roughly punctured, clypeus with a more or less distinct transverse carina. Anterior tibiae tridentate, very indistinctly serrulate above, the tarsus with first joint a little shorter than the second. Posterior tibiae fimbriate with unequal spinules, the first tarsal joint not as long as the next three. Mesosternum not carinate.

The species forming this group associate themselves naturally not only by their characters, but also by their appearance. They are as follows:

Clypeus emarginate at middle, without teeth.

Head bicolored, sides of thorax conspicuously paler, the elytra much paler than thorax.....**scabriceps.**

Head brown, thorax conspicuously coarsely punctured, the sides scarcely paler.  
**nanus.**

Clypeus emarginate and acutely dentate each side. Uniform ferruginous brown.  
**acerbus.**

In these three species it will be observed that the terminal joint of the maxillary palpi is much stouter, *i.e.* more fusiform than is usual in the genus.

**A. scabriceps** Lec.—Moderately elongate, somewhat broader behind, convex, brownish, elytra yellow with the suture narrowly darker. Antennæ pale rufo-testaceous. Head convex, dark brown behind the frontal suture, testaceous brown anteriorly, front not distinctly tuberculate, very coarsely, deeply and rather closely punctate, almost cribrate. Clypeus hemihexagonal, a feebly elevated transverse carina, anterior margin rather deeply emarginate, the angles on each side rounded, sides arcuate and slightly sinuate, genæ very feebly prominent and obtuse. Thorax scarcely narrowed in front, the sides slightly arcuate and sparsely fimbriate, hind angles distinct, but obtuse; base arcuate, with distinct marginal line, surface with moderate punctures, regularly, but not closely placed, less dense toward the sides; color brown, the sides indefinitely paler. Elytra a little wider than the thorax, humeri obtuse, slightly wider behind the middle, disc striate, the punctures moderately close and coarse, the intervals convex, each with a row of distant finer punctures. Body beneath coarsely, but sparsely punctate, the abdomen alutaceous or sparsely pubescent. Legs rufo-testaceous, posterior femora smooth, with a short row of coarse punctures near the knee, first joint of hind tarsus a little longer than the next two. Mesosternum not carinate, smooth at middle, alutaceous each side. Length .12-.14 inch; 3.-3.5 mm.

In the four specimens before me I have not observed any sexual differences.

A very pretty little species by its pale yellow elytra and the bi-colored head. It resembles *rugiceps* in the rough sculpture of the head, but the spinules of the tibiæ are unequal and closely placed, but are less unequal in length than is usual in the series.

Occurs in Colorado.

**A. nanus** n. sp.—Oblong, parallel, brownish, elytra paler, brownish testaceous. Antennæ pale rufo-testaceous. Head convex, coarsely punctured and wrinkled, front without distinct tubercles. Clypeus hemihexagonal, impressed in front and deeply emarginate, the angles rounded, the sides arcuate, a distinct transverse carina, genæ slightly prominent above. Thorax convex, the sides nearly parallel, slightly arcuate, sparsely fimbriate, hind angles well defined, but obtuse, base arcuate, with distinct marginal line, disc rather coarsely, but sparsely punctured, the punctures gradually finer and sparser near the side, the sides of thorax usually paler. Elytra as wide at base as the thorax, humeri obtuse, sides parallel, disc rather deeply striate, the punctures moderately coarse and close, the intervals convex with a row of distant irregular punctures. Body beneath very sparsely punctate, abdomen very sparsely pubescent. Posterior femora smooth, first joint of hind tarsus a little larger than the next two. Mesosternum not carinate, opaque in front with a narrow median smooth space. Length .10-.14 inch; 2.5-3.5 mm.

No sexual differences have been observed in the seven specimens examined.

This species is closely related to *scabriceps*, but the head is uniformly colored, the thorax more coarsely punctured, the spinules of the hind tibiæ much longer and less close, and the clypeus more deeply emarginate.

Occurs at Carrizo Springs, Texas (Schaupp).

**A. acerbus** n. sp.—Oblong, moderately convex, parallel, reddish brown, moderately shining. Antennæ rufo-testaceous. Head convex, coarsely and deeply, not densely punctured, front not tuberculate. Clypeus with a distinct transverse carina, impressed in front, moderately deeply emarginate at middle, on each side a small acute tooth, sides irregularly arcuate, genæ feebly prominent and obtuse. Thorax distinctly narrowed in front, the sides feebly arcuate, sparsely fimbriate, hind angles very obtusely rounded, base arcuate, with distinct submarginal line, disc convex, relatively coarsely, but sparsely punctured, the punctures finer and obsolete near the sides. Elytra as wide as the thorax, humeri obtuse, sides parallel, disc striate, striæ moderately coarsely and closely punctured, intervals convex, with a single series of irregular finer punctures. Body beneath sparsely indistinctly punctate, abdomen with slight pubescence. Posterior femora smooth, the first joint of hind tarsus very little longer than the next two. Length .12 inch; 3 mm.

No sexual characters observed in two specimens.

This is a small and inconspicuous species resembling *nanus* in form and coloration, but differing in the very distinctly bidentate clypeus.

Occurs in Texas, probably near San Antonio.

#### GROUP L.

Scutellum small. Front not distinctly tuberculate. Elytra more or less pubescent. Mesosternum not carinate between the coxæ. Thorax with basal marginal line, except in *rubripennis*.

This group, although containing but few species, is somewhat heterogeneous, the first and last species being the troublesome elements, while the others naturally associate themselves.

The following table will enable them to be separated:

- Genæ at least moderately prominent; head and thorax in great part black.
- Thorax entirely black, without basal marginal line; clypeus almost semicircular; elytra reddish.....**rubripennis.**
- Thorax pale at the sides, a distinct basal line.
- Elytra entirely yellow, merely the suture darker.....**subtruncatus.**
- Elytra clouded with fuscous.
- Sides of thorax fimbriate with rather long hair; anterior tibiæ with upper tooth small or wanting.....**Walshii.**
- Sides of thorax not fimbriate; anterior tibia normal.
- Elytra with greasy aspect, the pubescence well marked, color almost entirely fuscous.....**femoralis.**
- Elytra shining, pubescence feeble and deciduous, color more of yellow than of fuscous.....**prodromus.**
- Genæ not at all prominent; entire surface ferruginous; pubescence well marked; species rather small.....**tenuistriatus.**



**A. rubripennis** Horn.—Oblong oval, feebly convex, piceous black, moderately shining, elytra dull red or reddish yellow, legs brown, tarsi much paler. Antennæ ferruginous, the club somewhat darker, palpi pale. Head moderately convex, without trace of frontal tubercles, surface shining with very fine sparse punctures, a few coarser punctures near the sides. Clypeus nearly semicircular, slightly obtuse in front, but without trace of emargination, genæ moderately prominent, but obtuse. Thorax nearly twice as wide as long, slightly narrowed in front, sides feebly arcuate, more distinctly so anteriorly, the hind angles broadly rounded, base feebly arcuate, without trace of marginal line, disc moderately convex, sparsely very finely punctate, a few coarse punctures along the base, others more numerous near the side. Elytra as wide as thorax, the humeri distinct, not obtuse; sides feebly arcuate, disc rather finely striate, striae with fine punctures, the intervals feebly convex, biserially punctulate, on some of the intervals irregularly punctulate; color of elytra dull red or reddish yellow, the apical third and sides narrowly slightly darker as if stained, the pubescence yellowish, extremely fine and short, more distinct on the apical darker region. Mesosternum opaque, sparsely punctate. Metasternum sparsely punctate at middle, more densely, also opaque at the sides. Abdomen distinctly, not closely punctate. Anterior tibiae smooth in front, tridentate externally and crenate above, the first tarsal joint as long as the second. Posterior femora sparsely punctate, a series of coarse punctures near the knee, the first tarsal joint as long as the next four together. Length .28-.30 inch; 7-7.5 mm.

The only differences that seem to be sexual are found in the less shining elytra of the female with the thorax somewhat narrower and the sides less arcuate.

This species is easily known by the nearly semicircular clypeus, the reddish elytra finely pubescent near the apex, the pale red tarsi, the first joint of the hind tarsi being of an unusual length. It represents in our fauna *luridus*, of Europe, and by the adoption of the groups proposed by Erichson, would be included with that species and *depressus* in Group I.

Should the pubescence be entirely removed by accident from any specimens they would doubtless be referred to Group I and the table would lead directly to *depressus* and indicate its relationship.

Occurs in Canada and Pennsylvania; taken rather abundantly by Mr. Ulke in Maryland.

**A. subtruncatus** Lec.—Moderately elongate, parallel, body beneath dark brown, head and thorax piceous black, sides of thorax, elytra (the suture narrowly darker) and legs yellow. Antennæ testaceous, club fuliginous. Head moderately convex without trace of tubercles, sparsely punctate ♂, or coarsely densely punctate at sides and front ♀; clypeus truncate with very feeble trace of a broad emargination, the angles broadly rounded, sides feebly arcuate, genæ slightly prominent and obtuse. Thorax moderately convex, slightly narrowed in front, the sides feebly arcuate, hind angles very obtusely rounded, base arcuate with very fine marginal line; disc with moderate punctures nearly equal in size,

not closely placed, not more dense near the sides. Elytra as wide as the thorax, humeri obtuse, sides feebly arcuate posteriorly, disc moderately deeply striate, striae crenately punctured, intervals moderately convex, indistinctly sparsely punctate. Mesosternum opaque and alutaceous, rugose at the sides, not carinate. Metasternum at sides opaque, indistinctly punctate. Abdomen alutaceous, coarsely indistinctly punctate. Anterior tibiae smooth in front, tridentate externally and distinctly crenate above, the first tarsal joint shorter than the second. Posterior femora sparsely punctate, a row of coarse punctures distantly placed extending the entire length of femur, the first tarsal joint nearly as long as the next three. Length .20 inch; 5 mm.

*Male*.—Head sparsely punctate, the punctures a little closer, not coarser, near the sides and front. Anterior tibial spur stout, curved near the tip.

*Female*.—Head more coarsely punctate, much more densely and coarsely at sides and front. Anterior tibial spur slender and acute.

The elytra in this species are of the same pale yellow color as seen in the paler parts of *prodromus*. The scutellum and sutural interval are piceous, the interval being extremely narrow as it approaches the apex. The pubescence of the elytra is very fine and easily abraded, but the facies of the species is so nearly that of *femorialis* or *prodromus*, that there will be no difficulty in recognizing its relationship.

Occurs in Colorado and Nebraska.

**A. Walshii** Horn.—Moderately elongate, slightly broader posteriorly, body beneath brown, head and thorax piceous-black, the latter with broadly yellow sides, elytra fuscous less shining, the base and sides dull yellow, legs yellow. Antennae testaceous, club darker, palpi pale. Head moderately convex, without trace of tubercles, very sparsely and finely punctate in both sexes. Clypeus broadly feebly emarginate in front, the angles broadly rounded, slightly reflexed, sides oblique, genae scarcely at all prominent. Thorax less than twice as wide as long, slightly narrowed in front, sides moderately arcuate, the margin fimbriate, hind angles rounded, base arcuate with very fine marginal line; disc moderately convex, very finely and sparsely punctate, a few coarse punctures near the sides. Elytra as wide at base as the thorax, humeri obtuse, sides feebly arcuate, moderately deeply striate, striae very finely punctured, intervals convex, alutaceous with few extremely fine punctures, the three outer intervals more distinctly punctate; elytral margin fimbriate with moderately long hairs. Mesosternum finely alutaceous, a smoother space at middle. Metasternum alutaceous with very few scattered punctures. Abdomen sparsely punctate, alutaceous, sparsely hairy. Anterior tibiae smooth in front, externally bidentate, the upper tooth wanting in ♂, or very feeble ♀, not crenate above, the first joint of the tarsi as long as the second, joints 2-3-4 scarcely longer than wide. Posterior femora alutaceous, with very few punctures, the first tarsal joint as long as the next three. Length .20-.24 inch; 5-6 mm.

*Male*.—Anterior tibia sinuate on the inner side and fimbriate, a distinct emargination opposite the second tooth, spur moderately stout, suddenly flexed at tip. Metasternum deeply sulcate. Posterior femora with a dentiform process from the middle of the posterior margin, sometimes very feeble.

*Female*.—Anterior tibiae of normal form, the upper tooth more distinct than in the male, the spur slender and acute. Metasternum feebly sulcate. Posterior femora without tooth.

The female front tarsi are also a little longer than in the male, joints 2-3-4 being each longer than wide.

At first sight this species might readily be mistaken for *femoralis* by its form and coloration, but may be known by the feeble punctures of the striae. The pubescence is very evanescent and the majority of cabinet specimens rarely show any.

Occurs in Illinois and Kansas.

**A. femoralis** Say.—Oblong, nearly parallel, moderately convex, piceous black, sides of thorax indistinctly yellow, elytra fuscous, the base and often the entire margin paler, femora reddish yellow, tibiae darker. Antennae testaceous, club piceous. Head feebly convex, front very feebly trituberculate, surface shining, very sparsely finely punctate ♂, or coarsely and rather closely punctate ♀; clypeus subtruncate, angles broadly rounded, sides arcuate, genae moderately prominent, subacute. Thorax nearly twice as wide as long ♂, somewhat narrower in the ♀, slightly narrowed in front, sides arcuate ♂, nearly straight posteriorly ♀, hind angles distinct, but very obtuse, base arcuate, the marginal line fine, but entire; disc more convex in the ♂, sparsely and very finely punctate in ♂, more coarsely and closely ♀. Elytra as wide at base as the thorax, humeri obtuse, sides slightly arcuate, the disc with the striae fine and punctured, the intervals convex, rather closely punctate at their sides, the punctures confused with those of the striae so that the striae seem rather to be grooves confusedly punctured, the outer intervals less punctate. Mesosternum rather coarsely punctate, not carinate. Metasternum and abdomen absolutely punctate. Anterior tibiae tridentate externally, subrenate above, the first tarsal joint shorter than the second. Posterior femora very sparsely punctate, the first tarsal joint as long as the next three. Length .18-.26 inch; 4.5-6.5 mm.

*Male*.—Anterior tibial spur rather stout, not more slender to tip and obtuse. Elytra more coarsely punctured, the intervals apparently narrower.

*Female*.—Anterior tibial spur gradually more slender and acute at tip. Elytra less punctate, the intervals broader.

In addition to the above characters, those of the head and thorax are much more evident. The male elytra are also more shining, the female finely alutaceous and with a greasy aspect. In both sexes each interval has at summit a row of very distant punctures. The color of the elytra is a little variable, and it will be observed that the males are paler than the females, the general color of the form being dull yellow, while the other sex is fuscous with a dull yellow border and base. The pubescence is more permanent than usual in species possessing it, and I have never seen a specimen without it, no matter how old.

Occurs from Pennsylvania to Kansas and Texas, rare in Massachusetts (Blanchard).

**A. prodromus** Brahm.—Oblong, moderately convex, black, shining; sides of thorax and elytra pale yellow, the latter with an elongate fuscous space narrow near the humerus and broader posteriorly; legs yellow. Antennæ testaceous, club fuscous. Head feebly convex, the male with slight elevation at middle, surface smooth with a few nearly obsolete coarse punctures near the sides ♂, sparsely finely punctate ♀. Clypeus hemihexagonal, very broadly feebly emarginate, the angles rounded, sides arcuate, genæ moderately prominent, subacute. Thorax slightly narrower in front in both sexes, the sides more arcuate in the male, hind angles well defined, the apex slightly obtuse, base arcuate with fine marginal line; disc more convex in the male, the middle nearly smooth with a few coarse punctures toward the hind angles, in the female less convex, with only the anterior portion of the middle region smooth, otherwise with moderately coarse sparse punctures. Elytra as wide at base as the thorax, humeri distinct, but obtuse, striæ moderately deep, moderately coarsely crenately punctate, the intervals convex with few sparsely placed fine punctures ♀, or densely punctate on each side ♂. Mesosternum opaque each side, smoother at middle. Metasternum yellow at middle, sides opaque, sparsely punctate. Abdomen sparsely obsolete punctate. Anterior tibiæ smooth in front, tridentate externally and crenate above, the first tarsal joint shorter than the second. Posterior femora almost entirely smooth, a few coarse punctures near the knee, the first tarsal joint nearly as long as the next three. Length .22-.30 inch: 5.5.-7.5 mm.

*Male*.—Front slightly more convex at middle. Head and thorax with very few punctures. Anterior tibial spur stout, suddenly flexed inwards at tip. Elytral intervals densely punctulate at their sides, smooth only at middle. Posterior femora stouter.

*Female*.—Front evenly convex. Head and thorax with numerous punctures. Anterior tibial spur slender, acute, nearly straight. Intervals with very few punctures.

In both sexes the metasternum is yellow, flat, with a median longitudinal sulcus, deeper in the male, the flat region around the groove is closely and coarsely punctured in the male and very sparsely punctate in the female.

The elytral pubescence is quite fine and easily abraded, but more permanent than in *Walshii*, and less distinct than in *femoralis*. The present species is larger than *femoralis*, more shining, and with more yellow and less fuscous on the elytra.

Occurs very commonly in Europe, and in our country has been collected by Prof. Fernald in Maine. I have a specimen from Montreal, Canada.

**A. tenuistriatus** n. sp.—Form rather slender, as in *stercorosus*, moderately convex, entirely rufotestaceous, feebly shining. Head feebly convex, front without trace of tubercles, surface finely alutaceous, sparsely punctulate; clypeus very feebly emarginate in front, the angles rounded, sides oblique, very feebly arcuate, the genæ not at all prominent. Thorax distinctly narrowed in front, the sides feebly arcuate, margin fimbriate, hind angles well marked, but obtuse; base arcuate with fine marginal line; disc moderately convex, very sparsely

punctate at middle, with a few coarser punctures intermixed at sides. Elytra as wide at base as the thorax, humeri distinct, but obtuse; sides parallel, disc very finely striate, striae scarcely visible, punctate, intervals flat, rather coarsely and closely biserially punctate, each puncture bearing a short pale hair, elytral margin with short fimbriae. Mesosternum finely alutaceous, opaque. Metasternum and abdomen sparsely punctate. Anterior tibiae smooth in front, tridentate externally, crenate above, the first tarsal joint longer than the second. Posterior femora sparsely finely punctate, posterior tibiae rather stout, first tarsal joint not quite as long as the next three. Length .16 inch, 4 mm.

In the nine specimens examined there have been no sexual differences observed.

This species is remarkable in the very fine scarcely punctured elytral striae with the intervals very conspicuously biserially punctate.

Occurs in southwestern Texas.

#### GROUP M.

Scutellum small. Head not tuberculate, clypeus broadly emarginate, bidenticulate in *oblongus*. Mesosternum, at most, feebly carinate between the coxae. Thorax broader in front than posteriorly, the hind angles apparently obliquely truncate. Elytra narrower at base than at middle, the humeral angles dentiform.

In this group I have united the species formerly separated into groups N and O, as there does not seem to be any special reason for retaining them apart. In describing the species the base of the thorax is called "oblique each side near the hind angles," while in the above general characters the hind angles are said to be "obliquely truncate." The meaning is really the same, although some might be disposed to consider the oblique portion a part of the *base*, others of the *side* of the thorax.

The species are thus separable:

Elytra oblong; mesosternum obsoletely carinate.

Clypeus feebly emarginate, a small acute tooth each side.....**oblongus.**

Clypeus feebly emarginate, angles broadly rounded.....**sparsus.**

Elytra oval; clypeus feebly emarginate with rounded angles.

Thorax with numerous coarse and deep punctures; elytral striae fine, but deep; punctures fine.....**ovipennis.**

Thorax with very few coarse punctures; elytral striae fine with conspicuously large and distant punctures.....**humeralis.**

**A. oblongus** Say. — Oblong, moderately elongate, slightly broader posteriorly, piecous black, shining, legs brownish. Antennae brown, club darker. Head moderately convex, front without trace of tubercles, surface sparsely, rather

finely punctate at middle, more coarsely and densely at the sides. Clypeus broadly feebly emarginate, at middle a small, acute, reflexed tooth each side; sides strongly arcuate, genæ prominent, but obtuse. Thorax nearly twice as wide as long, distinctly narrower posteriorly; sides arcuate, hind angles distinct, but obtuse; base arcuate at middle, oblique near the hind angles, the marginal line distinct, disc moderately convex, coarsely sparsely punctate with finer punctures intermixed and more closely punctured near the sides. Elytra as wide at base as the thorax, wider posteriorly, humeri dentiform, striæ deep and subcrenately striate, the intervals slightly convex, very sparsely finely punctulate. Mesosternum coarsely and densely punctate, obtusely carinate between the coxæ. Metasternum at sides and abdomen sparsely punctate. Anterior tibiæ smooth in front, tridentate externally, the teeth rather small and in the apical third of the tibia, above crenate, first tarsal joint as long as the second. Posterior femora sparsely punctate, the first tarsal joint longer than the three following. Length .28-.36 inch; 7-9 mm.

*Male*.—Anterior tibial spur short, truncate and slightly emarginate at apex, the inner angle slightly prolonged. Upper spur of middle tibia short, slightly curved.

*Female*.—Anterior tibial spur acute.

As may be observed in many species, the thorax of the female has more numerous punctures.

This is one of the largest of our native species, and is easily known by the thorax narrower behind, the form of clypeus, the feebly carinate mesosternum and the unequal spinules of the hind tibia.

Occurs from Pennsylvania to Colorado. A specimen in the cabinet of Amer. Ent. Soc. is marked Arizona.

**A. sparsus** Lec.—Elongate, moderately convex, slightly wider posteriorly, piceous black, shining; legs reddish brown. Antennæ pale. Head moderately convex, front not tuberculate, sparsely punctulate at middle, a few coarser punctures near the side. Clypeus broadly, but feebly emarginate, the angles broadly rounded, sides arcuate, genæ moderately prominent, subacute. Thorax twice as wide as long, distinctly narrower posteriorly, sides arcuate, hind angles obtuse, base arcuate, on each side near the angles sinuate, the marginal line entire and deep, disc moderately convex with numerous very coarse punctures irregularly scattered, more closely placed near the base and sides with much finer punctures intermixed. Elytra narrower at base than the thorax, somewhat broader posteriorly, humeri dentiform, the striæ moderately deep and coarsely punctured, intervals slightly convex, with few indistinct fine punctures. Mesosternum coarsely punctate, feebly shining, distinctly carinate between the coxæ. Metasternum sparsely finely punctate at sides, abdomen with scarcely a trace of punctures, alutaceous and slightly rugose. Anterior tibiæ smooth in front, tridentate externally and not crenate above, the first tarsal joint a little longer than the second. Posterior femora sparsely punctate, the first tarsal joint as long as the next three. Length .26 inch; 6.5 mm.

The only specimen before me is a female, probably; the spur of the anterior tibia is slender and acute.

This species has almost exactly the form of *oblongus*, and is much more closely related to it than *ovipennis*, with which Dr. LeConte compares it. Probably by a *lapsus calami* the mesosternum was described as not carinate.

California, Mariposa region.

**A. ovipennis** Horn.—Oblong, convex, reddish brown or picous, shining. Antennæ and palpi reddish brown. Head moderately convex, without trace of tubercles, moderately closely finely punctured, a few coarser punctures above the eyes. Clypeus broadly emarginate in front, the angles rounded, sides arcuate, slightly sinuate, genæ prominent, subacute. Thorax nearly twice as wide as long, distinctly narrowed posteriorly, sides arcuate, hind angles almost obliterated, base very feebly arcuate, but very oblique at the sides, the basal marginal line deep; disc moderately convex with very coarse and deep punctures sparsely placed at middle, closer toward the sides and dense in the front angles, with extremely fine punctures in the intervals. Elytra oval, narrower at base than the thorax, humeri dentiform, the striæ fine, but moderately deep, finely not closely punctured, the intervals nearly flat on the disc and extremely finely sparsely punctulate, more convex near the apex. Mesosternum coarsely closely punctate, a narrow smooth space at middle, not carinate between the coxæ. Metasternum sparsely punctate at the sides. Abdomen very finely sparsely punctulate, at sides wrinkled. Anterior tibiæ smooth in front, tridentate externally, not crenate above, the first tarsal joint shorter than the second. Posterior femora sparsely punctate, the first tarsal joint longer than the next three. Length .30-.34 inch; 1.5-8.5 mm.

The two specimens at present before me are probably males. The spur of the anterior tibia is short, stout and curved inwards.

This species recalls the *nevadensis* group in its general form, although the elytra are still more oval and the humeri more dentiform. The unequal spinules of the hind tibiæ of the present species will easily separate it from any of that series.

Heretofore this species has been placed as a synonym of *cadaverinus* Mann., but with the insufficiency of the description of the latter I can see no reason for adopting this view. There are at least two species in group G., *gentilis* and *cribratus*, either of which might be the synonym, and which occur in the maritime regions of California, while *ovipennis* is only known from the distant interior, from which Mannerheim could hardly have obtained specimens at that time.

Occurs at Fort Tejon, California.

**A. humeralis** Lec.—Oblong, robust, convex, black, shining. Head moderately convex, without trace of frontal tubercles, finely alutaceous, not punctulate. Clypeus broadly feebly emarginate, angles broadly rounded, sides oblique, genæ prominent, subacute. Thorax very convex, transverse, narrower behind, sides feebly arcuate, hind angles almost obliterated, base feebly arcuate with deep marginal line, the sides near the hind angles obliquely sinuate; disc con-

vex, a few scattered large punctures, smooth in front. Elytra oval, narrower at base than the thorax, humeri prominently dentiform, striæ rather fine, but deep, with very large, round distant punctures, intervals slightly convex, smooth. Mesosternum coarsely punctured, not carinate between the coxæ. Length .14 inch; 3.5 mm.

The above is virtually a copy of the original description. From my memory of the type it is really impossible to say whether it should be referred to this or the *nevadensis* group. In any event it may be known by the large and distant punctures of the finer elytral striæ.

Occurs at Detroit, Mich.; a second specimen has been taken in Maryland by Mr. Ulke.

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**A.** (*Oxyomus*) **cadaverinus** Mann.—Oblongus, supra nigro, subtus rufopiceus, clypeo profunde emarginato, thorace anterior dilatato, varioloso, elytris punctato-striatis. Longit. 3 lin. Lat. 1½ lin.

Habitat in California, *Trogium* instar in cadaveribus exsiccatis. D. *Eschscholtz.*

The above is the entire description, and there is nothing to guide one as to its position except that the thorax is dilated in front and variolose, pointing in a manner either to the *nevadensis* group or that immediately preceding.

#### **OXYOMUS** Cast.

This genus was considered by Erichson a division of *Aphodius*, and the same view was adopted by Lacordaire, although the latter author remarks that the mouth parts make a passage toward *Amœcius* and *Psammodius*.

The only obvious character separating it from *Aphodius* is found in the costate elytra. The costæ are quite acutely elevated, while the striæ are replaced by broad grooves often so coarsely and closely punctured that the bottom seems divided transversely by small partitions.

The only species known to our fauna has been introduced.

**O. porcatus** Fab.—Oblong, parallel, moderately convex, brownish piceous, opaque. Antennæ and palpi rufotestaceous. Head feebly convex, sparsely finely punctate. Clypeus hemihexagonal, the angles obtuse, sides feebly arcuate, genæ moderately prominent, obtuse. Thorax one-half wider than long, not narrowed in front, anterior angles obtuse, sides scarcely arcuate, hind angles well defined, but obtuse; base arcuate, but slightly irregularly, the marginal line absent; disc convex, the median line broadly sulcate behind the middle, surface moderately coarsely, but not closely punctured, the punctures finer in front. Elytra as wide



at base as thorax, humeri slightly dentate; disc moderately convex, the sutural and nine discal intervals elevated in acute costæ, the sutural, first, second, fourth and sixth and eighth are entire, the others abbreviated, the striæ are replaced by the broad grooves between the costæ and are coarsely closely punctate. Mesosternum alutaceous, sparsely, coarsely punctate, finely carinate between the coxæ. Metasternum and abdomen sparsely coarsely punctured. Anterior tibiæ tridentate externally, not crenate, the first tarsal joint very little longer than the second. Posterior femora sparsely punctate, alutaceous, the tibiæ slender, the oblique carinæ feeble, the apex fimbriate with unequal spinules, the first tarsal joint longer than the next three. Length .10-.12 inch; 2.5-3 mm.

The male has the metasternum longitudinally impressed.

This insect is one of the smallest Aphodides in our fauna. The acutely costate elytra will readily separate it from any Aphodius, and the structure of the legs from either *Atænius* or *Dialytes*. It has evidently been introduced from Europe, where it is common, but in our country has been found near the cities of New York and Philadelphia.

#### DIALYTES Harold.

The essential difference between this genus and *Aphodius* is in the form of the anterior tibiæ. The outer teeth, excepting the external apical are obsolete, existing only in the faintest trace, and in addition there is a tooth in front near the insertion of the tarsi.

The structure of the mouth parts is the same as in *Aphodius*. The head, although deflexed, allows the eyes to be partly visible. Other characters given by Harold as the dentate humeri and the feeble oblique carinæ of the posterior tibiæ are found in various members of the genus *Aphodius*.

The species are three in number, and are thus defined:

Intervals of elytra flat; clypeus not toothed.....	<b>truncatus.</b>
Intervals finely carinate, striæ catenulate; clypeus with an acute tooth each side.....	<b>Ulkei.</b>
Intervals strongly elevated; clypeus not toothed, thorax with a deep median impression.....	<b>striatulus.</b>

All these species belong to the eastern portion of the Atlantic region.

**D. truncatus** Mels.—Oblong, broader behind, convex, piceous black, shining, legs brownish. Antennæ ferruginous. Head moderately convex, rather coarsely sparsely punctate. Clypeus hemihexagonal, broadly feebly emarginate in front, the angles obtuse, sides oblique, genæ obtuse. Thorax one-fourth wider than long, narrower in front, anterior angles rectangular, sides slightly sinuous, hind angles well defined, but obtuse; base arcuate, on each side near the hind angles oblique and sinuous, the marginal line distinct, disc convex, punctures moderately coarse, sparse at middle, closer at sides and base. Elytra as wide at

base as thorax, the base arcuately emarginate, humeri prominently dentate, disc convex, finely striate, striæ with fine not close punctures, intervals flat, smooth, at apex costiform. Mesosternum opaque, coarsely punctate, a smooth elevated line in front, not carinate between the coxæ. Metasternum moderately punctate. Abdomen obsolete coarsely punctate. Posterior femora sparsely punctate, the tibia with feeble ridges, the first tarsal joint longer than the next three. Length .22-.24 inch: 5.5-6 mm.

No sexual differences have been observed. Differs from either of the other two species by the flat elytral intervals and shining surface.

Occurs from Canada (Pettit) to Maryland; also in Massachusetts (Blanchard).

**D. Ulkei** Horn.—Oblong, broader behind, convex, sericeous opaque. Antennæ ferruginous. Head coarsely not closely punctate. Clypeus hemihexagonal, broadly emarginate in front with an acute reflexed tooth each side, the sides oblique, the genæ small, obtuse. Thorax nearly one-half wider than long, not or very slightly narrowed in front, the anterior angles rectangular, sides feebly arcuate, slightly undulating, hind angles well defined, not obtuse; base arcuate at middle, very oblique and sinuate each side, the marginal line distinct; disc convex, the median line vaguely impressed, surface coarsely and closely punctured, very densely at sides. Elytra a little wider than the base of the thorax, the base feebly emarginate, humeri prominently dentiform; disc convex, the striæ fine, catenulately punctured, on each side of the stria a very fine carina, the intervals elevated at middle in a fine carina, at the sides the spaces between the carinæ are bicatenuate. Mesosternum opaque, sparsely punctate, with a smooth fine carina in front. Metasternum coarsely punctate at middle, more finely at the sides. Abdomen sparsely indistinctly punctate. Posterior femora sparsely punctate, the tibiæ slender, the oblique carinæ feeble, the first tarsal joint longer than the next three. Length .24 inch; 6 mm.

A very pretty species in its peculiar surface lustre and elytral sculpture.

Occurs at Deer Park, Maryland.

**D. striatulus** Say.—Oblong, slightly broader behind, convex, piceous brown, opaque. Antennæ ferruginous. Head moderately coarsely punctate, closely behind and at sides, more sparsely at middle. Clypeus hemihexagonal, feebly emarginate, the angles obtuse, genæ very small. Thorax very little wider than long, slightly narrowed in front, anterior angles rectangular, sides nearly straight or very slightly sinuous, hind angles well defined, but obtuse; base arcuate at middle, very oblique and sinuate each side, basal marginal line absent; disc convex, the median line broadly and deeply impressed, not reaching the apex, surface coarsely cribrately punctured. Elytra as broad at base as the thorax, base emarginate, the humeri not dentate, but slightly prominent in front; disc convex, the intervals elevated in acute carinæ, the space between them concave with a row of indistinct coarse punctures. Mesosternum opaque, coarsely rugose. Metasternum coarsely, closely punctate. Abdomen opaque, somewhat rugose, each segment coarsely crenate in front. Posterior femur sparsely punctate, tibiæ slender, the first tarsal joint as long as the next four. Length 16.-.20 inch: 4-5 mm.

This species seems to bear the same relation to the others of the genus that *Oxyomus porcatus* does to the mass of Aphodii. In looking at the thorax from above, the sides of the base are so very oblique that the effect is produced of the thorax being rather abruptly coarctate at base.

Occurs from Canada and New England States to Maryland and Illinois.

#### ATENIUS Harold.

This genus was suggested by Baron Harold in 1867 for certain species previously placed in *Euparia*. The following are the characters given :

Head convex, not tuberculate. Mandibles concealed, the molar tooth distinct, laminae membranous. Maxillary lobes membranous. Eyes usually concealed, ventral segments united, the terminal separated from the preceding by a deeper groove. Mesosternum carinate. Pygidium free, deflexed. First joint of hind tarsus elongate, of the anterior tarsus, longer than the second. Posterior tibiae simple, without transverse carinae, straight. Allied to *Euparia*, differs by the posterior tibiae not arcuate, metasternum not abbreviated, sides of thorax not explanate.

The outer apical angle of the hind tibiae is always more prolonged than in *Aphodius*, and often spiniform. In all or nearly all the species the sides of the thorax are fimbriate, but the hairs are so easily lost and often so short that no account is taken of them in the following descriptions. The mesosternum is usually furnished with an obtuse polished carina between the coxae, but this is not present in several species and feeble in others. The metasternum at middle has a deep groove, present in all the species. The first joint of the anterior tarsus is always longer than the second. The pygidium is in part exposed beyond the elytra and is divided by a transverse elevated line, the exposed portion below this line is eroded and usually filled with dirt, the portion above is finely punctured, and has a deep median groove into which an inflexed edge of the elytron is inserted in the manner already indicated for *Ochodonus*.

The sculpture of the elytra in many of the species is peculiar in the appearance of the striae. These appear often coarsely punctured, when a look into the striae shows that the punctuation is really fine and distant, the deception arising from the sides of the intervals being crenate. It will also be observed that this crenation is entirely independent of the punctures of the striae and not caused by them.

Among the characters used in the following tables and descriptions one requires special mention. In Col. Hefte xii, 1874, p. 15, Harold makes use of the "accessory spinule of the middle and posterior tibiæ" in separating groups of species. This spinule is a prolongation of the apical margin of the middle and posterior tibiæ on the under side adjacent to the spurs. There is no difficulty in detecting it after a few observations.

Since the publication of the synopsis in 1871, a few species have been described by Baron Harold, and some new forms have been gradually accumulating in my cabinet. In the succeeding pages, among the new species, two only are described from uniques,—*insculptus* and *laeviventris*; of the old species *oblongus*, *lucanus* and *puncticollis* remain unique.

The following table will assist in the determination of the species. In some instances it has been made unusually full from the difficulty in recognizing the species in some parts of the series.

Clypeus subangulate, sometimes denticulate each side of the median emargination .....	2.
Clypeus feebly emarginate, the angles each side broadly rounded.....	5.
2.—Marginal line of posterior femur deep and entire.....	3.
Marginal line very short or absent.....	4.
3.—Posterior tibia without accessory spinule; front not rugulose at sides.	
Surface subopaque; first joint of posterior tarsus very much, nearly twice, longer than the long spur.....	<b>insculptus.</b>
Surface shining; first joint of posterior tarsus not longer than the long spur.	
Thorax densely punctured from apex to base; intervals of elytra subacutely carinate .....	<b>cylindrus.</b>
Thorax nearly smooth in front, coarsely, less densely punctured posteriorly; intervals nearly flat .....	<b>Lecontei.</b>
Posterior tibia with accessory spinule; front rugulose at sides; elytra suboval, intervals subcostiform.....	<b>lucanus.</b>
4.—Posterior tibia without accessory spinule.	
First joint of posterior tarsus as long as the long spur; species piceous or nearly black.	
Thorax densely punctured from base to apex.....	<b>abditus.</b>
Thorax densely punctured near base, almost smooth in front.	
	<b>texanus.</b>
First joint of posterior tarsus shorter than the long spur and evidently thicker near apex; ferruginous or brownish species.	
Thorax coarsely, sparsely and irregularly punctured, with finer punctures intermixed; abdomen with very few punctures.....	<b>desertus.</b>
Thorax closely and regularly punctured, a little more finely in front; abdomen coarsely punctured.....	<b>inops.</b>
Posterior tibia with accessory spinule; thorax as in <i>desertus</i> ; abdomen smooth, without punctures.....	<b>laeviventris.</b>

- 5.—Opaque species; thorax without basal marginal line; head densely finely punctured, not rugulose; posterior tibiæ without accessory spinule.  
 Elytral intervals flat.....**imbricatus.**  
 Elytral intervals alternately more elevated.....**alternatus.**  
 Shining species; thorax with basal marginal line .....6.
- 6.—Posterior tibiæ without accessory spinule .....7  
 Posterior tibiæ with accessory spinule.....12.
- 7.—Pale reddish brown species.  
 Striæ of elytra punctulate, intervals smooth.....**socialis.**  
 Striæ impunctate, intervals biserially punctulate.....**puncticollis.**  
 Piceous or black species .....8.
- 8.—Head simply punctulate, not rugulose .....9.  
 Head wrinkled and rugose at the sides .....11.
- 9.—Elytral intervals very flat; abdomen nearly smooth at middle.**Wenzelii.**  
 Elytral intervals convex; abdomen coarsely punctured. ....10.
- 10.—Elytra oblong oval, base slightly emarginate; form rather robust; marginal line of posterior femur entire.....**ovatus.**  
 Elytra elongate, parallel, base truncate; form slender, elongate; marginal line of posterior femur very short or absent.....**gracilis.**
- 11.—Form slender; thorax coarsely sparsely punctate; abdomen nearly smooth; marginal line of posterior femur absent.....**figurator.**
- 12.—Intervals of elytra very flat, densely punctured, the punctures nearly as coarse as those of the thorax; form short and robust; marginal line of posterior femur abbreviated.....**robustus.**  
 Intervals convex, rarely punctate .....13.
- 13.—Abdomen coarsely punctured from side to side.....14.  
 Abdomen coarsely punctate at sides, finely or nearly smooth at middle....15.
- 14.—Elytral striæ catenulate punctate; head densely punctured; posterior femur coarsely punctate, the marginal line entire.....**oblongus.**  
 Elytral striæ simply punctate; head wrinkled in front, without coarse punctures on occiput; posterior femur nearly smooth, the marginal line short.....**inquisitus.**
- 15.—Elytra smooth, not pubescent.....16.  
 Elytra with short erect hairs arising from punctures .....21.
- 16.—Clypeus finely punctured, without traces of rugæ; occiput with coarse punctures; posterior femur with deep marginal line extending two-thirds to base .....**strigatus.**  
 Clypeus transversely wrinkled or coarsely punctured .....17.
- 17.—Elytra parallel, the base nearly squarely truncate; abdomen with numerous coarse punctures at the sides, fewer and finer at middle. ....18.  
 Elytra somewhat oval, distinctly emarginate at base. ....20.
- 18.—Posterior femur with deep, marginal groove extending from knee nearly half to base; thorax without coarse punctures antero-medially.  
**stercorator.**  
 Posterior femur with at most a fine and feeble marginal line near the knee, usually absent .....19.
- 19.—The coarse punctures of thorax moderate in size, the finer intermixed, punctures very distinct.....**cognatus.**  
 The coarse punctures of thorax large, the finer punctures scarcely evident.  
**californicus.**

- 20.—Abdomen with very few punctures at side, smooth at middle; marginal line of posterior femur feeble and indistinct..... **lobatus.**  
 21.—Abdomen with few punctures; marginal line of femur short... **hirsutus.**

**A. insculptus** n. sp.—Oblong, moderately convex, black, feebly shining. Antennæ and palpi reddish brown. Head convex, densely and rather coarsely punctured in a transverse space on the occiput, in front very finely and indistinctly punctured. Clypeus at middle broadly, but feebly emarginate; on each side a small acute denticle, the sides arcuate, genæ moderately prominent, obtuse. Thorax nearly twice as wide as long, slightly narrowed posteriorly; sides feebly arcuate, hind angles very obtuse, base arcuate, the basal marginal line fine and distinct, disc moderately convex, a slight depression each side, the surface moderately coarsely punctured, the punctures denser toward the sides, rugose near the front angles, finer and sparser behind the head. Elytra as wide at base as the thorax, humeri dentiform, sides arcuate, disc deeply striate, striæ catenulately punctured, intervals with a finely elevated carina along their middle. Mesosternum scabrous, opaque, with a shining obtuse carina between the coxæ. Metasternum opaque, subgranulate at the sides. Abdomen finely alutaceous, feebly shining, coarsely, but sparsely punctured over their entire surface, segments 2-5 crenate along their anterior border. Anterior tibiæ tridentate externally, not crenate. Posterior femur coarsely sparsely punctate and alutaceous, the posterior marginal groove entire and deep, the tibiæ without accessory spinule, the first tarsal joint much longer than the long spur. Length .16-.18 inch; 4-4.5 mm.

Of this species I have seen but two specimens, collected in Florida. The species was supposed by Dr. LeConte (Proc. Am. Philos. Soc. 1878, p. 402) to be *sculptilis* Harold, and although it agrees fairly with the description of that species there is no accessory spinule at the inner angle of the apex of the hind tibia. It is most closely allied among our species to *cylindrus* Horn (*Hornii* Har.).

Two specimens, Florida.

**A. lucanus** Horn.—Form rather robust, brownish, moderately shining. Antennæ rufotestaceous. Head convex, coarsely not closely punctate in a transverse band posteriorly, sparsely obsolete punctate at middle and distinctly rugulose at the sides in front. Clypeus broadly emarginate, the angles of emargination distinct, the sides oblique, slightly arcuate, genæ prominent, but obtuse. Thorax less than twice as wide as long, slightly narrower behind (when viewed from above) sides feebly arcuate, the margin crenulate, hind angles distinct obtuse, base arcuate, the marginal line deep and entire; disc convex, coarsely and closely, not densely punctured, the puncture a little finer near the apical margin. Elytra as wide as the thorax, slightly oval, humeri dentiform, disc deeply striate, striæ not punctured, intervals rather acutely convex and with a row of fine punctures on each side below the apex. Mesosternum carinate between the coxæ, rather roughly scabrous in front. Metasternum coarsely and densely punctured at the sides. Abdomen piceous, coarsely sparsely punctured over the entire surface, segments 2-5 crenate in front. Anterior tibiæ tridentate externally, obsolete crenate above. Posterior femora coarsely sparsely punctate, the posterior marginal moderately deep and entire, the tibia with distinct accessory spinule, the first tarsal joint not longer than the long spur. Length .16 inch; 4 mm.

The characters given above and in the table make this one of the most sharply defined species in our fauna. It associates very naturally in facies and in the greater part of its characters with the three species which precede, but is readily known by the presence of a short, but distinct accessory spinule to the hind tibiæ.

One specimen, Cape San Lucas, Lower California, in the LeConte cabinet.

**A. cylindrus** Horn.—Elongate oval, moderately convex, piceous or black, moderately shining, legs reddish brown. Antennæ pale rufotestaceous. Head moderately convex, punctulate, the punctures at occiput coarser, at sides finer, the middle of clypeus nearly smooth. Clypeus broadly emarginate and slightly impressed at middle, an acute denticle each side, the sides arcuate, genæ moderately prominent, obtuse. Thorax about one and a half times as wide as long, the sides feebly arcuate, apex and base equal, hind angles obtuse, base arcuate at middle, oblique each side near the hind angles, the basal marginal line distinct, disc moderately convex, rather densely punctate, the punctures very little finer to the front. Elytra elongate oval, the base as wide as thorax, humeri slightly dentiform, surface deeply and broadly sulcate-striate, the striae indistinctly coarsely punctured, the intervals acutely elevated. Mesosternum opaque, densely and finely punctured, a polished carina between the coxæ. Metasternum closely, but indistinctly punctate at the sides. Abdomen feebly shining, sparsely punctate at middle, more coarsely at the sides, the segments 2-5 crenate along their anterior border. Anterior tibiæ acutely tridentate externally, suberenate above. Posterior femora sparsely punctate, the posterior marginal line entire, the tibia without accessory spinule, the first tarsal joint not longer than the long spur. Length .14-.16 inch; 3.5-4 mm.

The special characters which distinguish this species from those most closely related are given briefly in the table, and need not be repeated.

Occurs from North Carolina to Florida.

**A. texanus** Harold.—Similar in form to *abditus*, and very closely resembling it, except in the following characters: Surface more shining. Thorax less closely punctate posteriorly, the punctures becoming rapidly finer in front, so that the disc is nearly smooth behind the apical margin. Elytra rather less deeply striate, the striae crenately punctured, the intervals less convex than in *abditus* and crenate on the inner side by the punctures of the striae, the row of punctures on the outer side of the intervals very fine and scarcely evident near the apex. Length .16 inch; 4 mm.

This species so closely resembles *abditus* in all essential characters that one may suspect them to be merely variations, as may eventually be the case with *cylindricus* and *LeContei*.

Occurs in Texas and Arizona.

**A. desertus** Horn.—Oblong oval, slightly broader behind, moderately convex, rufoferruginous or pale brown, moderately shining. Head moderately convex, not closely punctate, anteriorly granulate and rugose. Clypeus broadly, but feebly emarginate, angulate each side and with a small erect denticle, sides arcuate with a feeble sinuation posteriorly, genæ feebly prominent, obtuse. Thorax twice as wide as long, not narrowed in front, sides feebly arcuate, hind angles very obtuse, base arcuate with a deep marginal line, disc moderately convex, with coarse and moderately deep punctures very irregularly scattered with a few finer punctures intermixed, a space near the side comparatively smooth, a few conspicuously large punctures near the front angles. Elytra as wide at base as the thorax, humeri finely dentate, sides slightly arcuate, disc deeply striate, crenate-punctate, intervals convex, smooth, crenate on the inner side. Mesosternum opaque, finely rugulose, carinate between the coxæ. Metasternum smooth. Abdomen very sparsely punctulate. Anterior tibiæ tridentate externally, obsoletely crenate above. Posterior femora sparsely finely punctulate, a short marginal line near the knee; posterior tibiæ without accessory spinule, the first tarsal joint shorter than the long spur. Length .12-.18 inch; 3-4.5 mm.

Among the species with dentate clypeus the present is readily known by its color and the very irregular coarse punctuation of the thorax. One other species of the group has the latter character but this has a distinct accessory tibial spinule. The ventral segments have the crenation along the anterior margin as is usual in the genus.

Occurs in California, near Fort Yuma; in Arizona; also in southern Utah.

**A. abditus** Hald.—Form slender, elongate, parallel, subdepressed, piceous, moderately shining, legs pale reddish brown. Antennæ and palpi rufotestaceous. Head moderately densely punctured posteriorly, smoother at middle, roughly punctured or subgranulate in front. Clypeus broadly, but feebly emarginate, a distinct angulation or small denticle each side, the sides arcuate, genæ moderately prominent obtuse. Thorax not quite twice as wide as long, slightly narrower posteriorly, the sides feebly arcuate, the hind angles rounded, base arcuate, the marginal line well marked, disc moderately convex, a slight depression at the anterior angles, the punctures moderate in size, closely placed, a little finer in front, dense toward the sides, especially in the front angles. Elytra as wide as the thorax, humeri dentate, sides nearly parallel, moderately deeply striate, striæ rather coarsely crenate-punctate, intervals moderately convex, with a series of finer punctures on the outer side of each ventral. Mesosternum opaque, strigose punctate in front, carinate between the coxæ. Metasternum coarsely sparsely punctate at middle, more rugose and finely at the sides. Abdomen coarsely punctate, sparsely at middle, more elevated at the side. Anterior tibiæ tridentate externally and feebly crenate above. Posterior femora sparsely punctate or nearly smooth, with at most a feeble trace of a marginal line near the knee; posterior tibia without accessory spinule, the first tarsal joint not longer than the long spur. Length .14-.16 inch; 3.5-4 mm.

This species seems widely distributed on the American Continent, specimens from Columbia, S. A., having been described by Harold



as *attenuator*. The latter is said to have the front angles of the thorax reddish (Col. Hefte xii, p. 22), but the type kindly given me is quite black all over, and it is probable that the specimen described may have been immature. Notwithstanding the wide distribution of this species it seems to vary but little.

Occurs from Massachusetts (Blanchard) to every point west and south, California and Arizona, thence through Mexico to South America. It has not yet occurred in our northwestern regions.

**A. Lecontei** Harold.—Form of *cylindrus*, piceous or black (reddish brown when immature), moderately shining, legs reddish brown. Antennæ rufotestaceous. Head moderately convex with coarser punctures along the occiput, the front and clypeus finely obsolete punctured. Clypeus impressed in front, broadly, but feebly emarginate, slightly angulate each side, the sides arcuate, the genæ feebly prominent, obtuse. Thorax similar in form to *cylindrus*, the punctures rather coarse, not densely placed, except at sides; in front with few punctures. Elytra oblong oval, humeri dentiform, as wide at base as the thorax, striæ deep and rather broad, the punctures coarse, not serrate, intervals convex, subcarinate at apex and with a row of indistinct punctures on the inner side below their apices. Mesosternum opaque rugulose, carinate between the coxæ, Metasternum indistinctly punctate at sides. Abdomen coarsely sparsely punctate, segments 2-5 crenate in front. Legs as in *cylindrus*. Length .14-.16 inch; 3.5-4 mm.

This species is closely allied to *cylindrus*, but has the elytral intervals much less carinate on the disc, the thorax is more coarsely and less densely punctured and the punctures are very much sparser behind the anterior margin.

Occurs from the District of Columbia to Louisiana.

**A. inops** n. sp.—Moderately elongate, parallel, feebly convex, reddish brown, shining. Head moderately convex, the occiput indistinctly punctate, entire front granulate. Clypeus broadly feebly emarginate; a small, acute tooth each side; sides arcuate, genæ feebly prominent, obtuse. Thorax about one and a half times as wide as long, not narrowed in front, sides very regularly, but feebly arcuate, hind angles broadly rounded, base arcuate the marginal line fine, disc moderately convex, the punctures not coarse, but very regularly and moderately closely placed, a little finer near the front, and with a smoother space near the hind angles. Elytra as wide as the thorax, humeri finely dentate, sides parallel, disc striate, striæ punctured, intervals feebly convex, crenate on their inner edge and with a row of very fine punctures on the outer side. Mesosternum opaque, finely strigoso-punctate, carinate between the coxæ. Metasternum finely punctate at middle, slightly rugose at sides. Abdomen rather coarsely punctate, the punctures finer and sparser at middle, denser at sides. Anterior tibiae tridentate externally, not crenate above. Posterior femora almost entirely smooth, a short trace of a marginal line near the knee; posterior tibiae without accessory spinule, the first tarsal joint shorter than the long spur. Length .14-.16 inch; 3.5-4 mm.

This species and *desertus* are approximated in the table by the comparatively short first hind tarsal joint. They also agree quite closely in color, but differ in the punctuation of the thorax, which, in the present species, resembles *abditus* in habitus.

Occurs in Arizona near the southern boundary, also in Texas.

**A. leviventris** n. sp.—Oblong, moderately elongate and convex, piceous brown, shining. Antennæ rufotestaceous. Head moderately convex, sparsely punctate, punctures along the occiput coarser, anteriorly and at the sides granularly rugose. Clypeus slightly impressed in front, at middle broadly, but feebly emarginate, angulate each side, sides oblique, slightly arcuate, genæ moderately prominent obtuse. Thorax less than twice as wide as long, base and apex equal, sides feebly arcuate, hind angles very obtuse, base arcuate with fine marginal line: disc moderately convex with coarse punctures sparsely irregularly placed at basal half and at the sides, the intervals between these with few finer punctures, the apical portion of the disc, immediately behind the head, without coarse punctures. Elytra as wide at base as the thorax, humeri rectangular not dentate, sides nearly parallel, the striæ deep, crenately punctate, the punctures crenating the inner side of the interspaces, the interspaces feebly convex on the disc, more convex at apex, with few extremely fine punctures. Mesosternum opaque and punctulate, subcarinate between the coxæ. Metasternum almost entirely smooth. Abdomen very smooth, with a very few extremely fine punctures, the segments 2-5 as usual, crenate in front. Anterior tibiæ tridentate externally, crenate above. Posterior femora scarcely punctulate, the marginal line deep and reaching more than half from the knee to trochanter, the posterior tibia with a moderately long accessory spinule, the first tarsal joint a little shorter than the long spur. Length .20 inch; 5 mm.

This species has a greater resemblance to the species associated with *stercorator* than to any of those with the angulate clypeus. While the clypeus is very plainly angulate each side it has not the small reflexed tooth of many of the species. The almost absolutely smooth abdomen is a character possessed by but few species among those at present known to me.

One specimen, southern Arizona (Morrison).

**A. imbricatus** Mels.—Oblong oval, moderately convex, piceous opaque, the surface usually covered with a brownish cinereous coating, elytral intervals with a single row of short scale-like hairs, legs brownish. Antennæ and palpi pale rufotestaceous. Head moderately convex, densely punctate, the punctures across the occiput coarser, those of the front slightly longitudinally strigose; clypeus at middle nearly smooth. Clypeus feebly impressed in front; broadly, but feebly emarginate, the angles broadly rounded, sides broadly arcuate, genæ feebly prominent, obtuse. Thorax nearly twice as wide as long, slightly narrower posteriorly, the sides in front arcuate, the posterior two-thirds nearly straight, hind angles very obtuse, base broadly arcuate without trace of basal marginal line, disc moderately convex, the punctures rather coarse and closely placed at base and sides a little finer in front, but at best faintly visible from the coating of the

surface. Elytra as wide at base as the thorax, humeri acutely dentate, sides arcuate, striae moderately deep, the punctures rather coarse, not closely placed indistinct, intervals flat, the third, fifth and seventh a little more elevated near the apex, each with a row of fine punctures bearing a small scale like yellow hair. Mesosternum opaque, rather coarsely punctate, carinate between the coxæ. Metasternum densely punctate. Abdomen coarsely punctate and rugulose, the segments as usual, crenate in front. Anterior tibiae acutely tridentate externally, subcrenate above, the first tarsal joint nearly as long as the next three. Posterior femur coarsely sparsely punctate, the posterior marginal line deep and entire, the posterior tibia without accessory spinule, the first tarsal joint one-fourth longer than the long spur. Length .16-.18 inch; 4-4.5 mm.

The surface of this species being concealed in great part by the argillaceous coating, the sculpture is often so concealed as to be with difficulty observed. The legs are often reddish brown, but usually piceous. There will be no difficulty in recognizing this species and *alternatus* in the genus, by their surface coating, the absence of marginal line at the base of the thorax and the deep and entire marginal line of the posterior femur.

In distribution this species seems to be nearly equal with *abditus*, as specimens have been collected in Mexico, Cuba, Honduras and Brazil. On specimens from these regions Harold described his *sordidus*, which is simply a synonym, as has been determined by a typical specimen sent to Dr. LeConte by Sallé.

In our fauna it extends from Massachusetts to Texas.

**A. alternatus** Mels.—Very like *imbricatus* in form and color. Head densely punctured, the punctures equal, at sides more rugose. Clypeus and genæ as in *imbricatus*. Thorax also similar in form, but with the base undulate, not regularly arcuate, the marginal line absent. Elytra also similar in form, finely striate, striae with rather distant, inconspicuous punctures, the intervals slightly convex, the alternate ones 1-3-5-7 more acutely elevated along the middle and cariniform. Mesosternum opaque rugulose, carinate between the coxæ. Metasternum closely punctate. Abdomen sparsely punctate from side to side, the punctures as well as the crenations often obscured by the surface coating. Anterior tibiae tridentate externally, crenate above. Posterior femur sparsely punctate, the marginal line feeble near the knee, gradually evanescent internally, the posterior tibia without accessory spinule, the first tarsal joint nearly a third longer than the long spur. Length .14-.18 inch; 3.5-4.5 mm.

This species seems to be much rarer than than *imbricatus*. In the description in my Synopsis it is stated that the striae are not punctate, and in many specimens this will, apparently, be true, as the coating of the surface so often hides smaller points of sculpture. From *alternatus* this species differs in the carinate intervals, the feeble marginal line of posterior femur and rather longer first hind tarsal joint.

Occurs from Pennsylvania to Texas.

**A. socialis** Horn.—Moderately elongate and parallel, feebly convex, rufous-ferruginous or pale castaneous, shining. Antennæ pale rufotestaceous. Head short and broad, less convex than usual, dissimilarly sculptured in the sexes. Clypeus broadly truncate and feebly emarginate, the sides arcuate, genæ very prominent, but obtuse. Thorax nearly twice as wide as long ♂ or less than that ♀, the sides arcuate, more feebly in ♀, hind angles very broadly rounded, the sides and base forming a continuous line, base arcuate, the marginal line very fine; disc moderately convex, dissimilarly sculptured in the sexes. Elytra as wide at base as the thorax, humeri not dentate, striæ deep, crenately punctate ♂ or less punctate ♀, intervals moderately convex, smooth. Mesosternum opaque, densely punctate, not carinate between the coxæ. Metasternum smooth. Abdomen with extremely few fine punctures, the segments crenate in front. Posterior femora sparsely punctate, without marginal line ♂, or with feeble nearly entire line ♀. Length .18-.20 inch; 4.5-5 mm.

*Male*.—Head broader and shorter, the genæ arising rectangularly from the head, surface sparsely and finely punctate. Thorax nearly twice as wide as long, the disc moderately convex, irregularly sparsely punctate, the punctures fewer in front and less numerous near the sides. Anterior tibiæ slender, bidentate\* externally, the apical spur incurved at tip.

*Female*.—Head less transverse, moderately closely punctate, rugose in front and at the sides, more distinctly emarginate at middle. Thorax less transverse than in the ♂, the sides less arcuate, disc rather more convex, the punctures coarser, more numerous, gradually finer anteriorly. Anterior tibiæ normal in form, tridentate externally, not crenate above, the terminal spur shorter and simple.

At the time of the first description of this species I had seen but two females, which were sent by Sallé to Dr. LeConte under the manuscript name which I adopted, hence my failure to recognize the remarkable sexual differences afterwards indicated by Harold (Berl. Zeitschr. 1874, p. 174).

The species is otherwise so remarkable that I translate Harold's remarks: "The posterior tibiæ are without transverse ridges, a character which forbids its association with *Aphodius*, and allies it with *Atenius*, *Saprosites* and *Euparia*. On the middle tibia there is, however, a transverse ridge, in which it resembles *Saprosites*. *Saprosites* is characterized by the relatively short tarsi and the denticulate middle tibiæ, characters to which the graceful and slender tibiæ and tarsi of *A. socialis* are foreign. If, therefore, one does not desire to create a new genus for every aberrant form our choice of position must be between *Atenius* and *Euparia*. The short and transverse head with the prominent genæ suggest *Euparia*; the posterior tibiæ

\* Apropos of this character Harold remarks that but one Aphodiide is known to him with this character *Aph. fulviventris*. Among our Aphodius several have the upper tooth either entirely or partially obliterated, as will be seen by reference to the preceding pages.

straight and slender, the genæ continuous, with the clypeus not separated by an incisure, give weight to an association with *Atænius*, from which it however differs by the non-carinate mesosternum and remarkable sexual characters which bespeak for it an isolated position in the genus."

These comments by Harold are certainly very true, yet all has not been said. The eyes are larger than usual in the genus and not concealed from the front when the head is deflexed. The maxillary palpi are also longer and the terminal joint slender, not thicker at middle as usual in the other species. It will also be observed that the terminal joint is fully twice as long as the penultimate in the ♀, the penultimate in the ♂ is two-thirds the length of the terminal.

With all these structural differences I think, with Harold, that it is far better to consider *socialis* an aberrant *Atænius* than to coin a new name.

Harold described the species under the same name as that used by me, he apparently not knowing the existence of my paper.

Occurs in Georgia, Louisiana and Texas.

**A. puncticollis** Lec.—Moderately elongate, parallel, ferruginous brown, moderately shining. Antennæ rufotestaceous. Head moderately convex, rather coarsely rugose, not more coarsely punctured posteriorly. Clypeus feebly emarginate at middle, broadly rounded each side, the sides oblique slightly arcuate, genæ feebly prominent, obtuse. Thorax less than twice as wide as long, sides nearly parallel, feebly arcuate, hind angles obtuse, base arcuate, the marginal line distinct, disc moderately convex, the punctures not coarse, but moderately closely placed, becoming gradually finer in front. Elytra as wide at base as the thorax, humeri distinct, but not dentiform, finely striate, striae not punctured, the intervals flat, irregularly biserially punctulate. Abdomen sparsely punctate, the punctures finer at middle. Anterior tibiæ tridentate externally, not crenate above. Posterior femora smooth, with trace of a short marginal line near the knee; posterior tibiæ without accessory spinule. Length .16 inch; 4 mm.

The type and unique specimen of this species is in such bad state that I am unable to give some desirable details of the under side. While an inconspicuous species, it is allied only to the female of *socialis*, from which it may be separated by the characters in the table. The striae are not punctured, but the punctures on the inner side of the intervals give these a crenate appearance, and may deceive a casual glance with the belief that the striae are punctured.

One specimen, El Paso, Texas.

**A. Wenzelii** n. sp.—Moderately elongate and convex, parallel, picous black, shining, legs reddish brown. Antennæ rufotestaceous. Head convex, moderately densely punctate, the punctures coarser across the occiput and very

fine and sparse at the middle of the front. Clypeus broadly feebly emarginate, the angles broadly rounded, sides arcuate, genæ moderately prominent, obtuse. Thorax one and a half times as wide as long, apparently narrowed slightly at base, sides feebly arcuate, hind angles broadly rounded, base arcuate, the marginal line distinct, disc moderately convex, the punctures coarse and close at the basal half, denser and finer at the front angles, the punctures at middle gradually finer from the basal toward apical margin. Elytra as wide at base as the thorax, the humeri slightly dentate, surface moderately deeply striate, striæ not distinctly punctate, intervals very flat in front, cariniform on the apical declivity, the inner sides deeply crenate, the surfaces finely indistinctly punctulate near the base. Mesosternum coarsely punctured and opaque in front, not carinate between the coxæ. Metasternum sparsely punctulate. Abdomen sparsely punctate, coarsely at sides, finely at middle, the segments crenate in front. Anterior tibiæ acutely tridentate externally, subcrenate above. Posterior femur smooth without trace of a posterior marginal line, the posterior tibia without accessory spinule, the first tarsal joint a little longer than the long spur. Length .18 inch; 4.5 mm.

A well marked species in the present series by the very flat elytral intervals, with less lustre than would be expected from one so black, from the fact that the surface of the elytral intervals is extremely finely alutaceous. At first glance the striæ would seem to be punctured, but the inner sides of the intervals are deeply crenate causing that appearance.

It is well to observe that in this species the usual obtuse, polished carina is not present between the middle coxæ. While there can be no doubt that the present species is a true *Atanius*, the absence of the carina here makes a similar character in *socialis* less remarkable.

Taken at Atlantic City by Mr. Henry Wenzel, to whom I dedicate the species as an evidence of my appreciation of the kind help at all times given me from his cabinet. Occurs also in Florida (cab. LeC.) one in my cabinet marked Colorado, which may be open to doubt.

**A. ovatulus** Horn.—Form rather robust and moderately convex, recalling *Lecointei*, piceous black, moderately shining, legs brownish. Antennæ rufotestaceous. Head moderately convex, densely and rather coarsely punctured, the punctures becoming rapidly finer to the front and at the sides. Clypeus slightly impressed in front; broadly, but feebly emarginate at middle, the angles broadly rounded, sides arcuate, genæ obtuse. Thorax about one and a half times as wide as long, apparently slightly narrower posteriorly, sides feebly arcuate, hind angles obtuse, base arcuate, with a slight sinuation near the angles; disc moderately convex, the punctures at middle coarse, rather close, becoming finer to the front, at sides densely punctured and opaque. Elytra as wide at base as the thorax, elongate oval, humeri finely dentate, sides moderately arcuate, striæ deep, transversely not closely punctate, intervals very convex, subcarinate at apex, with indistinct punctures on the inner side below the apex of each interval. Mesosternum opaque, coarsely punctured, carinate between the coxæ. Metasternum coarsely punctured. Abdomen coarsely, not densely, punctured from side to side,

the sides crenate in front. Anterior tibiæ tridentate externally, the teeth not large, above obsolete crenate. Posterior femur sparsely punctate, the posterior marginal line entire, the tibia without accessory spinule, the first tarsal joint a little longer than the long spur. Length .14 inch; 3.5 mm.

Closely allied in form and sculpture to *Lecointei*, and in a less degree to *cylindrus*, but differs, especially, from either by the form of the clypeus. It is also related to *vevator* Har., a species from the West Indies and Brazil, which is, however, larger and with different elytral sculpture.

Occurs from Pennsylvania to Louisiana.

**A. gracilis** Mels.—Form slender, elongate, parallel, subdepressed, piceous black, legs piceous or brownish, tarsi paler, moderately shining. Antennæ and palpi rufotestaceous. Head moderately convex, closely punctate, the middle of front and anterior portion of clypeus smoother, the punctures across the occiput coarser. Clypeus slightly impressed in front, at middle broadly, but feebly emarginate, on each side broadly rounded, the sides arcuate, genæ moderately prominent. Thorax one and a half times wider than long, apparently a little narrower posteriorly, sides moderately arcuate, hind angles broadly rounded, base arcuate, the marginal line very distinct, disc moderately convex, a distinct depression in the front angles, a feebler one at middle of declivity, median line posteriorly obsolete impressed, punctures moderately coarse and rather close, somewhat denser at the sides, a little finer toward the front, but somewhat closer. Elytra as wide as the thorax, humeri slightly dentate, sides parallel, striæ deep and broad, not distinctly punctured, the intervals convex, almost cariniform, with a series of catenuliform elevations on each side below the summit, those on the inner side more distinct. Mesosternum opaque, coarsely punctured, strongly carinate between the coxæ. Metasternum coarsely sparsely punctate. Abdomen similarly punctured, the last segment smoother, the segments crenate in front. Anterior tibiæ tridentate externally, not crenate above. Posterior femur sparsely punctate, the posterior marginal line entire, the tibia without accessory spinule, the first tarsal joint longer than the long spur. Length .12-.16 inch; 3-4 mm.

A small species of slender parallel form, and feeble surface lustre, widely distributed over our territory, exhibiting very little variation, except slightly in the sculpture of the thorax. The carination of the prosternum in front of the coxæ is more acute than usual, and the post-coxal laminiform elevation better marked.

Occurs from Massachusetts (Blanchard) to Arizona and California, and has been, like *abditus*, found in Mexico, South America and the West India Islands.

**A. figurator** Harold.—Elongate, parallel, feebly convex, piceous black, shining; legs piceo-rufous, tarsi paler. Antennæ rufotestaceous. Head moderately convex, coarsely punctured across the occiput, sparsely finely punctured at middle, coarsely punctured rugose and somewhat wrinkled at the sides. Clypeus impressed in front, broadly feebly emarginate, on each side with broadly rounded

angles, sides feebly arcuate, genæ very obtuse. Thorax one and a half times as wide as long, not narrowed posteriorly, the sides feebly arcuate, hind angles very obtuse, base arcuate, the marginal line distinct, disc moderately convex, the punctures coarse, sparsely and irregularly placed, less numerous near the base, an entirely smooth space near the hind angles. Elytra as wide at base as the thorax, humeri scarcely dentate, sides parallel, striæ rather coarsely crenate punctate, intervals flat, smooth. Mesosternum in front opaque and punctured, the intercoxal carina short and indistinct. Metasternum smooth. Abdomen smooth, either entirely without punctures or with a very few fine and indistinct. Anterior tibiæ tridentate externally, not distinctly crenate above. Posterior femora smooth without marginal line, the tibia without accessory spinule, the first tarsal joint a little longer than the long spur. Length .14-.16 inch: 3.5-4 mm.

Through the kindness of Baron Harold I have received a typical specimen of this species, and can therefore be certain of the identification of the specimens before me. Harold describes the striæ as "finely punctate," but in a small insect, like the present, where the punctures occupy nearly as great a space as the intervals, between them should be called "rather coarsely crenate punctate." The present species has been compared with *Haroldi* Steinh., from the Argentine Republic, which has the clypeus slightly angulate each side of the emargination, and the punctures of the thorax deeper. Two specimens in my cabinet from the Indian Territory and Arizona have a suspicion of an angulation and the punctures of the thorax deeper and more numerous, the striæ less deep and finely punctured. I am, however, unwilling to consider these *Haroldi* without comparison, and do not think it advisable to give them a new name merely for the locality differences. Their existence in our fauna is indicated so that they may be recognized by those possessing them.

Occurs in Georgia, Louisiana and Texas.

**A. robustus** Horn.—Oblong oval, moderately convex, facies robust, black, subopaque; legs piceo-rufous. Antennæ piceous. Head moderately convex, rather coarsely and densely punctured, except at middle of front, the sides rugose, but not transversely wrinkled. Clypeus impressed in front; broadly, but feebly emarginate, broadly rounded each side, the sides oblique, feebly arcuate, genæ moderately prominent, subacute. Thorax twice as wide as long, slightly narrow at base, sides feebly arcuate, hind angles broadly rounded, base arcuate, the marginal line fine, but distinct; disc moderately convex, very densely and rather finely punctured over the entire surface, except a narrow smooth median line posteriorly. Elytra as wide as the thorax, not more than one and a quarter times longer than wide, humeri rather strongly dentate, sides arcuate; disc finely, but rather deeply striate, striæ indistinctly punctate, intervals very flat, densely punctured, the punctures nearly as coarse as those of the thorax. Mesosternum opaque, rather coarsely punctured, intercoxal carina very indistinct. Body beneath more shining than above. Metasternum coarsely sparsely punctate. Abdomen coarsely sparsely punctate, the segments crenate in front. Anterior



tibiæ strongly tridentate externally, crenate above. Posterior femora sparsely punctate, the marginal line extending from the knee to middle. tibia with distinct accessory spinule, the first tarsal joint elongate, but not longer than the long spur. Length .18 inch: 4.5 mm.

Next to *socialis* this species is one of the most remarkable in our fauna, without, however, possessing any very striking structural characteristics. In facies it resembles *Notibius gagates*, a Tenebrionide. Its form is shorter and broader than any *Atenius* in our fauna, and the dense and very equal punctuation of the entire upper surface is a peculiarity by means of which it may be at once known.

Its distribution is peculiar and restricted, and it seems rare. Specimens are known from Wisconsin, Missouri and Kansas.

**A. oblongus** Horn.—Oblong, nearly parallel, black, feebly shining. Head convex, densely punctate, the punctures coarser on the occiput and gradually finer in front, clypeus at middle much smoother. Clypeus broadly, but feebly emarginate, on each side rounded, the sides arcuate, genæ feebly prominent, obtuse. Thorax nearly twice as wide as long, sides nearly parallel, feebly arcuate, hind angles distinct, but obtuse; base arcuate, the marginal line distinct and deep, disc moderately convex, the punctures rather closely placed, a little finer to the front and much denser at the sides. Elytra as wide at base as the thorax, the humeri sharply dentiform, disc deeply striate, striae catenulate, intervals convex, the inner intervals with a series of closely placed punctures each side of the summit of the carina, the outer intervals more densely punctulate at their sides from apex to bottom. Mesosternum carinate between the coxæ, anteriorly densely punctulate and opaque. Metasternum coarsely punctured at middle, scabrous and opaque at the sides. Abdomen very coarsely and closely punctate from side to side, the segments 2-5 crenate in front. Anterior tibiæ tridentate externally, crenate above. Posterior femora coarsely, but not closely punctate, the posterior marginal line deep and entire, the posterior tibia with distinct accessory spinule, the first tarsal joint longer than the long spur. Length .24 inch: 6 mm.

This species, in an arrangement according to facies, should be placed after *alternatus* and *imbricatus*, as it more nearly resembles these in form than the more shining species which follow. It is an easily known species, being the only one with simple clypeus with an accessory tibial spinule and entire marginal line to the posterior femora.

One specimen, California.

**A. inquisitus** n. sp.—Oblong oval, slightly broader behind, moderately convex, piceous or castaneous, shining, legs pale reddish brown. Antennæ pale rufotestaceous. Head moderately convex, sparsely punctate, sides of clypeus transversely wrinkled. Clypeus broadly, but feebly emarginate and impressed at middle, on each side broadly rounded, the sides oblique, feebly arcuate, genæ obtusely rounded. Thorax one and a half times as wide as long, not narrower behind, sides feebly arcuate, nearly straight, hind angles very obtuse, base arcuate, marginal line distinct, disc convex, with coarse punctures moderately

closely placed at the declivous portion of the sides and more sparsely in a narrow region along the base, the median and anterior portion of the disc sparsely finely punctured. Elytra as wide at base as the thorax, sides arcuate and slightly wider posteriorly, humeri dentate, disc deeply striate, striae finely punctured, intervals convex, but not carinate, crenate on their inner side, smooth. Mesosternum opaque, densely punctured, the intercoxal carina short. Metasternum sparsely punctate at sides. Abdomen coarsely punctured, less coarsely at middle almost cribrate at the sides. Anterior tibiae tridentate externally, crenate above. Posterior femora almost entirely smooth, the marginal line extending from knee half way to base, the tibia with distinct accessory spinule, the first tarsal joint a little longer than the long spur. Length .16-.18 inch; 4-4.5 mm.

With this species a series begins in which *stercorator* may be taken as the central form, and in which the species are very troublesome to separate. Of all of them large series have been studied in the material accumulated in the LeConte cabinet and my own with the results given in the synoptic table, in which the distinctive characters have been given at unusual length.

Occurs in southwestern Texas and probably also in Mexico.

Specimens closely resembling the preceding species are in the LeConte cabinet collected in Panama. The only appreciable difference is in the finer punctuation of the thorax of the Panama forms. They are probably not specifically distinct.

**A. strigatus** Say.—Oblong, parallel, moderately elongate and convex, piceous black, shining; legs somewhat paler. Antennae rufotestaceous. Head moderately convex, extremely finely sparsely punctured without trace of rugae, the occipital region with coarser punctures. Clypeus slightly impressed in front, broadly feebly emarginate, broadly rounded each side, the sides oblique, slightly arcuate, genae moderately prominent, subacute. Thorax nearly twice as wide as long, slightly narrowed posteriorly, sides feebly arcuate, nearly straight, hind angles very obtuse, base arcuate, the marginal line distinct, disc moderately convex with coarse punctures sparsely placed in a narrow region along the base, never closely at the sides, the punctures of the anterior and middle regions very fine and sparse, almost entirely absent in front. Elytra as wide at base as the thorax, humeri dentate, sides parallel, disc deeply striate, striae finely punctured, intervals feebly convex, crenate on both sides, smooth above. Mesosternum opaque, densely punctured in front, not carinate between the coxae. Metasternum smooth at middle, slightly rugose at the sides. Abdomen coarsely punctate at sides, more finely at middle, the last two segments smooth at middle, the segments crenate in front. Anterior tibiae tridentate externally, crenate above. Posterior femora smooth, the marginal line extending two-thirds from knee to base, the tibia with distinct accessory spinule, the first tarsal joint a little longer than the long spur. Length .18-.20 inch; 4.5-5 mm.

A specimen, which is presumed to be a male of this species, has the anterior tibia somewhat more slender and the spur incurved. The punctuation of the thorax is also finer and the sides of the intervals less crenate. The humeri are also less dentate.

In my former synopsis the name *strigatus* was placed as a synonym of *stercorator*. This was the result of what I believe to be an incorrect identification of Say's species. The description of that author says "clypeus with very minute punctures and larger one at the base," and had there been any anterior rugæ they would have been indicated. It resembles the true *stercorator*, but differs in the frontal sculpture and the absence of the usual polished carina between the coxæ. A specimen kindly given me by Baron Harold as his idea of Say's species proves to be *cognatus* Lec.

Occurs from the Middle States to the Rocky Mountain region and south to Georgia.

**A. stercorator** Fab.—Oblong, moderately elongate and convex, piceous black, shining, legs rufopiceous or brown. Antennæ rufotestaceous. Head moderately convex, not very closely punctate, punctures coarser on the occiput, gradually finer to the front, the sides rugose and transversely wrinkled. Clypeus impressed in front, broadly emarginate at middle, on each side rounded, the sides feebly arcuate, gema moderately prominent, subacute. Thorax one and a quarter times as wide as long, not narrowed behind, sides feebly arcuate, hind angles rounded, base arcuate, the marginal line rather deep, disc moderately convex, the punctuation rather coarse and sparse along the base, a little closer and coarser at the sides, these punctures with a few finer ones intermixed, the median and anterior portions of the thorax finely punctate. Elytra as wide at base as thorax, parallel, humeri with small tooth, disc deeply striate, striæ punctured, intervals feebly convex and on each side crenate, more distinctly on inner side. Mesosternum opaque, densely punctured, a moderately long intercoxal carina. Metasternum smooth. Abdomen coarsely punctured at the sides, very finely and sparsely at middle, the segments crenate in front. Anterior tibiæ tridentate externally, crenate above. Posterior femora sparsely finely punctate, the marginal line deep, extending from knee half to base, the tibia with distinct accessory spinule, first tarsal joint a little shorter than the long spur. Length .20-.22 inch; 5-5.5 mm.

The above description is taken from specimens sent me some years ago by Dr. Candéze, and are from Buenos Ayres. The differences between it and the preceding species have already been alluded to. With the next species it seems even more closely related, and I can find only the differences alluded to in the table.

Among the numerous specimens of the group which are usually aggregated as *stercorator* in collections I have seen but one specimen in the cabinet of Dr. LeConte which can be considered a true *stercorator*. It seems, therefore, rare in our country.

One specimen, Florida.

**A. cognatus** Lec.—Oblong, parallel, moderately elongate and convex, piceous black, shining; legs reddish brown. Antennæ rufotestaceous. Head moderately convex, not densely punctate, the punctures coarser across the occiput.

coarse at the sides and usually more or less wrinkled. Clypeus moderately impressed in front, broadly feebly emarginate, on each side broadly rounded, sides feebly arcuate, genæ moderately prominent, subacute. Thorax one and a half times as wide as long, sides feebly arcuate, hind angles rounded, base arcuate with deep marginal line, disc moderately convex, punctuation moderately coarse, sparsely and irregularly placed, a little closer near the sides, very little finer toward the front, with finer punctures everywhere intermixed. Elytra as wide at base as thorax, humeri dentate, sides nearly parallel, disc striate, striae punctured, intervals slightly convex, smooth, more coarsely crenate on the inner side. Mesosternum densely punctured and opaque, indistinctly carinate between the coxæ. Metasternum with a few coarse punctures at middle, smooth at the sides. Abdomen with few coarse punctures at the sides, moderately smooth at middle, the segments crenate in front. Anterior tibiæ tridentate externally, obsolete crenate above. Posterior femur almost entirely smooth, the marginal line short or absent, the tibia with distinct accessory spinule, the first tarsal joint a little longer than the long spur. Length .18-.20 inch; 4.5-5 mm.

This species varies a little in the sculpture of the head. In some the sides of the clypeus are simply coarsely punctured like the occiput, while in others the same region is distinctly wrinkled. The marginal line of the posterior femur varies from a fine impression about one-fifth of the length of the femur to a punctiform depression, and in nearly half the specimens is entirely absent.

From *strigatus* this species is known by the frontal sculpture and its extremely feeble frontal line; from *stercorator* by the latter character and by the coarse punctures of the thorax extending to the apical marginal; from the next species the differences are less describable and will be given under it.

The form supposed to be *strigatus* by Harold, is that with the sides of the clypeus punctate and not wrinkled.

Occurs from the New England States to the Rocky Mountains, Texas and Sonora.

**A. californicus** n. sp.—Oblong, parallel, moderately elongate and convex, piceous, shining; legs reddish brown. Antennæ pale rufotestaceous. Head moderately convex, punctures coarser but sparser along the occiput, very fine and sparse at middle of front, the anterior portion of clypeus and sides transversely wrinkled. Clypeus impressed in front; broadly, but feebly emarginate, the angles broadly rounded, sides oblique, feebly arcuate, genæ moderately prominent, obtuse. Thorax one and a half times as wide as long, not narrower posteriorly, sides feebly arcuate, marginal line deep, disc moderately convex, the punctures very coarse, but sparsely placed, a little closer near the front angles, more sparse at middle near the base, a little finer along the front margin, the finer intermixed punctures extremely minute. Elytra as wide at base as the thorax, humeri distinctly dentate, sides very slightly arcuate, disc deeply striate striae finely not closely punctate, intervals flat, feebly convex at apex, smooth, the inner edges alone crenate. Mesosternum opaque, densely finely punctured,

a distinct intercoxal carina. Metasternum smooth. Abdomen coarsely punctate at sides, smooth at middle, the segments crenate in front. Anterior tibiae tridentate externally, crenate above. Posterior femur smooth, the marginal line absent, except a faint trace near the knee, posterior tibia with accessory spinule, the first tarsal joint as long as the long spur. Length .18 inch; 4.5 mm.

As will be seen by the characters of the table this species is most nearly allied to *cognatus*, and is the only one about which there should be any difficulty. On comparing the two the punctuation of the present is strikingly coarser on the thorax and the fine punctures extremely minute. In *cognatus* the intervals of the elytra are distinctly crenate on both sides.

Occurs at San Bernardino, Cal.

**A. lobatus** Horn.—Oblong oval, slightly broader behind, moderately convex, piceous brown, shining; legs reddish brown. Antennæ rufotestaceous. Head moderately convex, coarsely punctured along the occiput, at middle more sparsely finely punctate, at sides and front transversely wrinkled. Clypeus impressed in front, broadly emarginate at middle, the angles broadly rounded, sides slightly arcuate, genæ moderately prominent, obtuse. Thorax nearly twice as wide as long, not narrowed behind, sides feebly arcuate, hind angles very obtuse, base strongly arcuate, the marginal line distinct, disc moderately convex, with coarse and deep punctures rather sparsely placed along the base and at the sides with finer punctures intermixed, the middle and anterior portion of disc with very few coarse punctures and with fine punctures sparsely placed. Elytra as wide at base as the thorax, slightly broader behind, base arcuately emarginate, humeri dentate, disc deeply striate, striæ not closely punctured, intervals moderately convex and with few very fine punctures, the inner side finely crenate. Mesosternum densely punctured and opaque, carinate between the coxæ. Metasternum smooth. Abdomen with few obsolete coarse punctures at the sides, smooth at middle. Anterior tibiae tridentate externally, crenate above. Posterior femur smooth, except a few large punctures near the knee, the marginal line fine, extending one-third toward base, the tibia with distinct accessory spinule, the first tarsal joint as long as the long spur. Length .22 inch; 5.5 mm.

This species has a more robust facies, is broader behind and more convex than any of the series to which it has closest relationship. The color is always piceous brown or dark castaneous but never piceous-black. While the thorax is more coarsely punctured than in *cognatus* it is less so than in *californicus*. The thorax is also more arcuate at base, and the base of the elytra correspondingly emarginate, while in the preceding species the elytral base is truncate.

While all the forms from *inquisitus* to the present species are closely allied and difficult to separate by description, they seem quite distinct and readily separable when the specimens are seen.

Occurs at Cape San Lucas, Lower California.

**A. hirsutus** Horn.—Oblong, moderately elongate and convex, nearly parallel, ferruginous brown, feebly shining. Antennæ rufotestaceous. Head moderately convex, rather closely punctate, punctures coarse across the occiput, finer and sparser at middle, transversely wrinkled at the sides in front. Clypeus impressed in front, emarginate at middle, on each side less broadly rounded, sides arcuate, genæ feebly prominent, obtuse. Thorax twice as wide as long, slightly narrowed in front, sides anteriorly arcuate, posteriorly nearly parallel, hind angles rounded, base rather strongly arcuate with distinct marginal line, disc moderately convex, with intermixed punctuation of coarse and fine punctures, the coarse punctures numerous, but not dense along the base and sides, sparse and smaller at the anterior portion of the disc. Elytra as wide as the thorax, humeri slightly dentate, sides feebly arcuate, striæ deep, distantly punctured, intervals feebly convex, crenate on the inner side, summit with a row of fine punctures on the outer side, each bearing a short, erect, yellowish hair. Mesosternum opaque, rather coarsely punctured, carinate between the coxæ. Metasternum smooth. Abdomen coarsely sparsely punctured at the sides, smooth at middle, the segments crenate in front. Anterior tibiæ tridentate externally and subrenate above. Posterior femur smooth, the marginal line fine, almost obsolete, extending half way to base, the tibia with accessory spinule, the first tarsal joint as long as the long spur. Length .16–.18 inch; 4–4.5 mm.

This species was originally described from two much mutilated specimens found dead and disarticulated. There are now two perfect specimens, from which the description can be more accurately given.

The clypeus is rather more deeply emarginate than usual in this series, so that when viewed directly from above there appears to be an angulation each side. There would, however, be no difficulty should the species be referred to the angulate series as the table would lead directly to *leviventris*, from which it is very easily known. The presence of the short erect hairs on the elytral intervals will make the species known wherever it may be placed. Occurs in Arizona, Camp Grant and southward.

#### **EUPARIA** Serv.

Head short, feebly convex, not tuberculate, eyes hidden in repose, genæ large. Mandibles concealed beneath the clypeus, the basal tooth compact, with membranous lamina. External maxillary lobe membranous, the inner corneous, the palpi slender, the last joint twice as long as the preceding. Thorax deeply emarginate in front, the sides deplanate and ciliate. Scutellum narrow, acute. Humeri of elytra prolonged to the front and strongly carinate. Pygidium slightly exposed, not inflexed. Legs slender, the middle and posterior tibiæ arcuate, the convexity internal, the posterior without ob-

lique carinae, the apical angle prolonged in a spiniform process, the spurs long and slender. Posterior tarsi slender, the first joint elongate, claws small.

This genus is closely allied structurally to *Atenius*, and the species of the latter were included in *Euparia* until separated by Harold in 1867. In fact the distance between the two genera is partly obliterated by *Atenius socialis*, and they would be made still closer by the separation of the latter as a distinct genus and the only advantage gained would be another name.

The only characters to be relied on in separating the two genera mentioned are in the form of the thorax (broad with deplanate margins) and the middle and hind tibiae (arcuate in *Euparia*, straight in *Atenius*).

**E. castanea** Serv.—Oblong, parallel, convex, picous shining, sparsely hairy, beneath and legs brown. Antennae ferruginous. Head vertical in repose, coarsely, closely and roughly punctured in front, more sparsely and finely posteriorly. Clypeus at middle truncate and vaguely emarginate, on each side arcuate, an incisure at end of frontal suture, genae very prominent, subacute. Thorax one-half wider than long, anterior angles rounded, sides slightly undulating, parallel, the margin explanate, widely in front, very narrowly behind, hind angles distinct, but obtuse, the base lobed at middle, suddenly sinuate near the angles, without basal marginal line, disc subgibbous at middle, sparsely muricately punctulate, the lateral margin quite smooth. Elytra much narrower than the thorax, base rather deeply emarginate, the humeral angles prominent to the front with an oblique carina forming a portion of the basal margin, the disc finely striate, striae punctate, intervals flat, with numerous coarse punctures, which are somewhat muricate on the declivity, those punctures on the side intervals have a subbiserial arrangement. Mesosternum opaque, rather roughly punctured in front, more sparsely behind, a fine carina between the coxae. Metasternum nearly smooth. Abdomen sparsely muricately punctate. Posterior femur sparsely punctate, first joint of hind tarsus longer than the next three. Length .20 inch; 5 mm.

The entire surface of the body has short yellowish hairs arising from all the punctures, the legs are also sparsely hairy.

The form of this insect is so unlike any other species in our fauna as to make it readily known. The figure published by Westwood, although giving a good general idea of the insect, is far from accurate in many of the even important details.

Occurs in Florida, Alabama and Louisiana in the nests of a small ant.

#### **RHYSEMUS** Muls.

In this genus the head is deflexed, the eyes invisible in repose. Labrum and mandibles concealed beneath the clypeus, the molar tooth of mandibles corneous. The maxillae are membranous, the

internal lobe corneous. Anterior tibiæ tridentate, middle and posterior tibiæ with feeble trace of oblique ridges. Tarsi slender, the first joint of the posterior elongate.

This genus is now almost universally admitted, although Thomson (Skand. Col. v) places the only species known to him in *Psammodius*. It seems, however, intermediate between *Atænius* and *Psammodius*.

All the species known to me have the lateral margin and base fimbriate with clavate spinules, in *Psammodius* they are simple hairs. As the character is common to all it is omitted in the description.

Our species are separated as follows:

Clypeus obtuse or rounded each side of emargination.

Intervals of elytra with a row of small tubercles on the inner side, a continuous, finely elevated line on the outer..... **scaber.**

Intervals with two rows of tubercles ..... **californicus.**

Clypeus angulate or subdentate on each side.

Intervals with a double row of nearly equal tubercles, vertex simple.

**sonatus.**

Intervals with a series of elevations, each tubercle with a scale-like hair, vertex with a transverse elevated line..... **riparius.**

The elytral sculpture is often very difficult to appreciate, and it is only by good, clear daylight that any description can be made with accuracy, but with artificial light under the power of a compound microscope very deceptive results are obtained.

**Rh. scaber** Hald.—Oblong, moderately convex, piceous opaque, legs brownish. Antennæ pale. Head moderately convex, granulate, the granules coarser at middle and in front, denser, finer and more opaque posteriorly. Clypeus moderately emarginate at middle, the angles rounded, sides arcuate, genæ very obtuse. Thorax one-fourth wider than long, slightly narrowed in front, anterior angles obtuse, sides arcuate, lateral margin not distinctly crenulate, hind angles broadly rounded, base arcuate with distinct marginal line, disc convex, densely granulate, with four discal equidistant transverse rows of larger tubercles, the anterior two entire, the posterior two interrupted, these larger tubercles more shining. Elytra as wide as the thorax, humeri slightly dentate, sides slightly arcuate, striæ fine, indistinctly catenulately punctured, the intervals with a row of elongate tubercles placed closely and slightly oblique on the inner side, a more elevated cariniform line on the outer side which is entire anteriorly, interrupted posteriorly. Mesosternum opaque, densely punctured, finely carinate between the coxæ. Metasternum smooth. Abdomen nearly smooth, the segments crenate in front, each with a transverse row of serrate punctures at middle. Posterior femora smooth, the marginal line fine and entire, first joint of hind tarsus nearly as long as the next three. Length .14-.16 inch; 3.5-4 mm.

In this species the thoracic sculpture has the most perfect development of any in our fauna, the transverse carinæ are well marked and the granules larger and more shining than those of the interspaces.



The elytral sculpture is sufficiently explained above. On the front of the head a triangular space, from the vertex to the middle of the genæ each side, is smoother and the tubercles larger and more distant.

Occurs at the margin of streams from the Middle States to Texas.

**Rh. californicus** Horn.—Oblong, moderately convex, piceous opaque, legs brownish. Antenna pale. Head moderately convex, granulate, the granules anteriorly coarser and more shining. Clypeus emarginate, the angles obtuse, sides oblique feebly arcuate, genæ obtuse. Thorax one-third wider than long, anterior angles obtuse, sides irregularly arcuate, lateral margin distinctly crenulate, hind angles very obtuse, base arcuate, the marginal line distinct; disc moderately convex, closely granulate with four discal transverse ridges, two entire, two interrupted as in *scaber*, the ridges very feebly elevated, the granules not coarser. Elytra as wide at base as the thorax, humeri distinctly dentate, disc finely striate, striæ indistinctly catenulately punctured, intervals flat, with two rows of granules, the inner granules more elongate and less closely placed, the outer row smaller and more closely placed, on the outer intervals the inner row of granules is indistinct. Mesosternum opaque, densely scabrous, finely carinate between the coxæ. Metasternum with few coarse punctures at middle, scabrous at the sides. Abdomen with an irregular transverse series of rather fine, closely placed punctures, each segment crenate in front. Posterior femur almost entirely smooth, the marginal line entire, first joint of hind tarsus as long as the next three. Length .12-.16 inch; 3-4 mm.

On comparing this species with *scaber* it will be observed that the thoracic ridges are less evident and the granules are not more coarse than those of the rest of the surface. The lateral margin is irregularly arcuate, and the extreme edge distinctly crenate. In the present species there are two distinct rows of tubercles on the intervals, while in *scaber* the outer row of tubercles forms an entire carina.

Occurs in southern California at the margin of streams, especially common near Visalia.

**Rh. sonatus** Lec.—Oblong, moderately convex, piceous black, opaque, elytra sometimes brownish, body beneath and legs reddish brown. Antenna pale. Head densely, nearly equally granulate. Clypeus emarginate at middle, the angles each side well defined, rather acute, sides feebly arcuate, the genæ very obtuse. Thorax one-fourth wider than long, not narrowed in front, anterior angles obtuse, sides arcuate, the margin distinctly crenate, hind angles broadly rounded, base arcuate, the marginal line feeble, disc moderately convex, surface closely granulate, with four very indistinct, transverse, discal ridges composed of granules very slightly larger, the first ridge alone entire. Elytra as wide as the thorax, humeri slightly dentate, disc finely and indistinctly striate, the intervals with two nearly equal rows of slightly elongate tubercles. Mesosternum opaque, densely punctate, finely carinate between the coxæ. Metasternum slightly scabrous at sides. Abdomen nearly smooth, the transverse row of punctures scarcely visible on the segments, each segment crenate in front. Posterior femora smooth, the marginal line deep and entire, first joint of hind tarsus nearly as long as the next three. Length .12-.14 inch; 3-3.5 mm.

The thoracic ridges are here still less distinct than in *californicus*. The elytral sculpture is, however, similar, except that in *sonatus* the striae are less deep, while the granules of the intervals are nearly equal. The clypeus on each side of the emargination is nearly as distinctly angulate as in *Aphodius serval*, by which means this and the next species may be readily separated from the others.

Occurs in Kansas, Colorado and Montana.

**Rh. riparius** Horn.—Brownish black, oblong, moderately convex, opaque, legs brown. Antennae pale. Head moderately convex, closely and relatively coarsely granulate, vertex with elevated arcuate line interrupted at middle, sometimes in form of chevron. Clypeus broadly emarginate at middle, on each side distinctly angulate, sides oblique, feebly arcuate, genae obtuse. Thorax one-fourth wider than long, anterior angles obtuse, sides irregularly arcuate, margin crenate, hind angles broadly rounded, base arcuate, the marginal line indistinct, disc convex, rather coarsely granulate, with four indistinct, transverse discal ridges, the first only entire, a very distinct, broad, median sulcus from the first carina to base. Elytra as wide as the thorax, humeri slightly dentate, disc indistinctly striate, intervals with two rows of small tubercles, the inner scarcely evident, the outer distinct, each tubercle with a short yellow scale-like hair. Mesosternum opaque, densely punctured, a very fine and short median carina. Metasternum scabrous at sides. Abdomen sparsely punctate, each puncture with a scale-like hair, the segments crenate in front. Posterior femora sparsely punctate with scale-like hairs, the marginal line distinct, first joint of hind tarsi nearly as long as the next three. Length .12-.14 inch; 3-3.5 mm.

In this species the granules of the head and thorax are relatively coarser than in any of our species. The transverse ridges of the thorax are very feebly indicated, in fact the ridges are so broad that the narrow grooves separating them seem the feature of the sculpture. In my original description the grooves are spoken of to the exclusion of the ridges, but for the sake of uniformity and greater ease in comparison the same method of description has been adopted for all the species.

With this species I have united *caelatus* Lec. On comparing the types I find them identical in every respect. At the time of the description of *caelatus*, *riparius* was represented by an unique specimen and Dr. LeConte had no specimen at hand for comparison.

Occurs in Arizona from Camp Grant southward.

#### **PLEUROPHORUS** Muls.

This genus does not seem to have been admitted by the greater number of authors who have had occasion to deal with it since first suggested by Mulsant. The characters are rather feeble, but seem to possess fully as much value as those allowed to separate other genera in the group.

The mouth parts are practically identical in *Pleurophorus* and *Psammodius*, and the anterior femur is as stout or stouter than the posterior. The middle and posterior tibiæ of *Pleurophorus* are slender, not thickened at tip, the spurs are slender as in *Atenius*, but less elongate. The posterior tarsi are slender, not compressed, the joints not triangular, the claws of normal size.

All the species of *Psammodius* have the side of the thorax fimbriate, but no such structure is seen in either of the *Pleurophorus*.

In *Psammodius* there is a feeble trace of the carina of the second ventral segment, but in no species so well marked as in *Pleurophorus*.

Two species are known to me:

*Clypeus* verrucose, thorax irregularly coarsely punctured, anterior femur emarginate beneath..... **cæsus.**  
*Clypeus* finely sparsely punctate, thorax very regularly, not densely punctured, anterior femur entire..... **ventralis.**

**P. cæsus** Panz.—Form slender, elongate, piceous black, shining, subcylindrical, legs ferruginous. Antennæ pale rufotestaceous. Head moderately convex, a few coarse punctures along the occiput, in front verrucose. Clypeus broadly emarginate at middle, the angles obtuse, sides arcuate, genæ feebly prominent, very obtuse. Thorax about one-fourth wider than long, slightly broader in front, anterior angles obtuse, sides feebly arcuate, hind angles distinct, but obtuse; base arcuate, with distinct marginal line, disc moderately convex, a deep postapical groove beginning at the front angles, but not reaching the middle, a large round fovea at middle of declivity sometimes divided into two smaller foveæ, the median line impressed with coarse deep punctures, the surface very coarsely and irregularly sparsely punctured, a smooth space at the sides. Elytra a little narrower than the thorax, humeri obtuse not carinate; sides parallel, the striæ deep, punctate, intervals slightly convex, smooth, crenate on their inner border. Mesosternum opaque, rugulose, carinate between the coxæ. Metasternum smooth, deeply longitudinally impressed. Abdomen smooth, the segments crenate in front, the second segment carinate at middle. Anterior femur emarginate on its lower edge forming thereby two obtuse teeth. Posterior femur smooth, the marginal line fine, but entire; the tibiæ slender, spurs slender and long, tarsi long, the first joint nearly as long as the next three. Length .12 inch; 3 mm.

This is one of the smallest Aphodiids in our fauna, very nearly of the same general form as *Atenius gracilis*, but rather more convex. The punctuation of the thorax is somewhat closer in some specimens, these may possibly be females, at all events no sexual characters have been observed otherwise.

In this species the first three elytral striæ only are entire and reach the apex.

Occurs abundantly in Europe, and probably introduced in our country, where it is found in the Middle States regions and occasionally abundantly near Baltimore (Lugger) and Washington (Ulke).

**P. ventralis** n. sp.—Elongate, parallel, semicylindrical piceous, shining; legs reddish brown. Antennæ pale. Head convex, sparsely finely punctate, clypens broadly truncate, angles obtuse, sides arcuate, genæ very obtuse, feebly prominent. Thorax one-fourth wider than long, very little wider in front, anterior angles obtuse, sides feebly arcuate, the margin very narrowly explanate, hind angles obtuse, base arcuate, with distinct marginal line, disc moderately convex, punctures moderate in size; sparsely, but very regularly placed, becoming gradually finer toward the front and sides, and with very few close to the base. Elytra a little narrower at base than the thorax, humeri slightly dentate, the striæ very deep and broad, the punctures large, indistinct and distant; intervals very convex, smooth. Mesosternum opaque, coarsely punctured with a fine median groove, acutely carinate between the coxæ. Metasternum with a small group of coarse crowded punctures. Abdomen smooth, the first three segments acutely carinate at middle, the fourth and fifth segments arcuately emarginate at middle of front margin, the notch with membrane. Anterior femur with lower edge entire. Posterior femur smooth, without marginal line, the tibia slender, with slender spurs; the tarsi nearly as long as the tibia, the first joint nearly as long as the next two. Length .16 inch; 4 mm.

This species has the same general form as the preceding, but is more convex. The ventral characters are very singular and have no parallel in our entire series. The carination of the first three segments is very plainly marked. The next two segments have a nearly semicircular emargination of the anterior margin occupying two-thirds the length of the segment and nearly the middle third of the width. The emargination is membranous. It is possible that the emargination may be a sexual peculiarity, although perfectly identical in the two specimens examined.

In this species the first five striæ of the elytra reach the apical margin, a character not observed in any other Aphodiide in our fauna.

In the sculpture of the thorax the species more nearly resembles *Atenius*, especially as there are no grooves or foveæ.

Occurs in Canada, Ontario, and at Washington (Ulke).

### **PSAMMODIUS** Serv.

In this genus the outer lobe of the maxilla is corneous and terminated by stout curved spines or hooks, the internal lobe coriaceous. The mandibles are entirely concealed beneath the clypeus and are semimembranous, except that the base and the tooth are corneous. In repose the head is deflexed and the eyes concealed, the front is verrucose. The thorax is usually transversely grooved and coarsely punctate, but several species show no traces of this. The legs are never very stout, the hind tibiæ are generally triseriately denticulate,

although several have distinct oblique ridges. The tarsi of the posterior legs are short, the joints flattened, the first elongate triangular, the last very short and small, the claws minute, often entirely lost, apparently by use.

As all the species have the margin of the thorax fimbriate with slender hairs no mention of this is made in the specific descriptions.

The species seem to indicate the affinities of the genus in three directions:—*bidens*, with the cylindrical forms of *Aegialia* and more remotely with *Atenius*—*agialioides*, *quinqueplicatus* and especially *interruptus* with *Rhyssemus*, while *celatus* and *hydropicus* resemble the robust *Aegialie*.

The maxillary structure is the only decisive character for separating the genus, but in our fauna the short compressed hind tarsi with triangular joints will readily distinguish it from either *Rhyssemus* or *Pleurophorus*.

Authors do not seem to be in accord as to the limits of the genus. Harold, in the *Catalogus* and later, includes *Pleurophorus*, but the characters of this seem to be as well defined as several other universally recognized genera and will be retained in the present essay as distinct.

The species known at this time, although few in number, are about as numerous as those found in Europe; they may be separated in the following manner:

- Form oblong.....2.  
 Form short, elytra inflated..... 4.  
 2.—Clypeus with a small reflexed tooth each side of the broad emargination; disc of thorax comparatively smooth..... **bidens.**  
 Clypeus obtusely angulate each side; disc of thorax roughly sculptured.....3.  
 3.—Disc of thorax with transverse grooves more or less distinct.  
 Occiput with deep oblique grooves arranged in chevron; thoracic ridges sharply defined.....**agialioides.**  
 Occiput without oblique grooves.  
 Elytral intervals convex with few or no simple punctures; color ferruginous moderately shining .....**quinqueplicatus.**  
 Elytral intervals with a series of indistinct flattened tubercles; color brownish, with a pale elytra, subopaque... .. **interruptus.**  
 Disc of thorax very coarsely, irregularly and sparsely punctate; species very small.....**nanus.**  
 4.—Thorax with two deep transverse grooves at sides, the one post-apical, the other slightly in front of middle; posterior tibiae with oblique ridges.  
**celatus.**  
 Thorax without transverse grooves; posterior tibiae without oblique ridges.  
**hydropicus.**

**Ps. bidens** Horn.—Oblong, parallel, convex, piceous, shining, legs brownish. Antennæ rufotestaceous. Head closely, moderately coarsely verrucose. Clypeus slightly impressed in front, broadly emarginate, on each side a small acute reflexed tooth, the sides arcuate, a slight sinuation at end of frontal suture, genæ feebly prominent, obtuse. Thorax one-third wider than long, not narrowed in front, sides regularly arcuate, the margin feebly crenulate, anterior angles rounded, the posterior very obtuse, base arcuate, the marginal line distinct, disc moderately convex, a rather deep subtransverse impression in the front angles, a small fovea at middle of declivity, the surface sparsely punctate above, a smooth region along the apex, the sides broadly smooth. Elytra as wide at base as the thorax, humeri obtuse, sides nearly parallel, disc deeply striate, striæ indistinctly punctured at bottom, intervals convex, smooth, slightly crenate on their inner border. Mesosternum opaque, densely punctate, carinate between the coxæ. Metasternum slightly scabrous at sides. Abdomen coarsely sparsely punctate, the segments crenate in front. Posterior femora stout, nearly smooth, the marginal line very short, apical, the tibiæ stout, with one transverse carina near the apex, the spurs unequal, slender. Posterior tarsi longer than half the tibia, the first joint much broader at apex. Length .14 inch : 3.5 mm.

At first glance this species is not very unlike small specimens of *Aphodius granarius*. On comparison with the other species of the genus, this one is remarkable in the bidenticulate clypeus and the comparatively smooth thorax. All trace of the transverse impressions is lost, while the rather deep and irregular impression at the front angles recalls *Atenius*.

Occurs in Georgia and Florida.

**Ps. agialioides** Hald.—Oblong oval, slightly broader behind, convex, moderately shining, piceous, elytra and legs dark brown. Antennæ pale rufotestaceous. Head moderately convex, coarsely and closely verrucose, the occipital region with two deep angulate lines separated by an elevated ridge. Clypeus broadly triangularly emarginate, angles each side very obtuse, sides slightly arcuate, a slight notch at end of clypeal suture, genæ obtuse. Thorax one-third wider than long, slightly narrower in front, anterior angles very obtuse, hind angles distinct, but obtuse; base arcuate, the marginal line distinct, disc convex, with four well defined and convex transverse ridges, the first two entire, the last two interrupted by a median depression, the ridges smooth, the intervals between them coarsely punctured, a region along the side smooth. Elytra as wide at base as the thorax, humeri very obtuse, sides nearly straight, slightly divergent, the striæ moderately deep, not closely punctured, intervals slightly convex, smooth. Mesosternum opaque, densely punctured, not carinate between the coxæ. Metasternum slightly scabrous at sides. Abdomen almost absolutely smooth. Posterior femur stout, smooth, the marginal line moderately deep, reaching two-thirds to base, the tibia not stout, without oblique ridges, but with three longitudinal series of muricate tubercles, one on each of the edges, the third along the middle of the outer side, the spurs slender, but obtuse at tip, the tarsi not longer than half the tibia, the first joint elongate triangular. Length .16 inch : 4 mm.

In the two specimens before me the last ventral segment is excavated along its anterior border in a manner similar to that of the pygidium of *Atenius*. The material at hand is not sufficient to enable me to determine whether the character is sexual or not.

The very sharply defined ridges of the thorax will enable this species to be at once determined, and the chevron-like ridges of the occiput are peculiar to it.

The ridges of the thorax are said to be four, but are apparently five, but no count is made of the thickened anterior margin of the thorax, the discal ridges are alone counted.

Occurs from New York southward to Georgia, but seems to be rare.

**Ps. quinqueplicatus** Horn.—Oblong oval, convex, slightly broader posteriorly, rufoferruginous, feebly shining. Head moderately convex, verrucose in front, the vertex and occiput with obsolete distant punctures. Clypeus broadly triangularly emarginate, the angles each side obtuse, the sides oblique, scarcely arcuate, genæ obtusely rounded. Thorax one-fourth wider than long, slightly narrowed in front, hind angles obtusely rounded, base feebly arcuate, the marginal line distinct, disc moderately convex with five distinct transverse ridges, the first two entire the others interrupted by a broad median impression, the grooves between the ridges coarsely punctured, a moderately large oval space at the hind angles smooth. Elytra as wide at base as the thorax, humeri slightly dentate, sides feebly arcuate, disc moderately deeply striate, the striae punctured, intervals moderately convex, extremely finely alutaceous, the inner edges crenate. Mesosternum opaque, scabrous, not carinate between the coxæ. Metasternum with few punctures at sides. Ventral segments with a row of indistinct punctures. Posterior femora elongate oval, smooth, a marginal groove posteriorly extending two-thirds to base, posterior tibiæ moderately stout, without oblique ridges, but with the three longitudinal series of small acute tubercles, the spurs slender, but not acute at tip, tarsi longer than half the tibiæ, the first joint elongate triangular. Length .14 inch; 3.5 mm.

While there are but four discal ridges on the thorax in the preceding species there are five in the present. The last ventral shows no trace of the excavation seen in the preceding species. All the specimens studied, seven in number, have the same color.

The typical specimens in the LeConte cabinet were from the Mexican boundary survey and collected by Major Webb, the exact locality unknown. Those in my cabinet were collected by Morrison south of Tucson, Arizona.

**Ps. interruptus** Say.—Oblong, nearly parallel, moderately convex, thorax piceous, head and elytra brown, beneath and legs reddish brown. Head moderately closely verrucose. Clypeus broadly triangularly emarginate, the angles on each side very obtuse, sides feebly arcuate, genæ very obtuse. Thorax one-half

wider than long, slightly narrowed in front, anterior angles obtuse, sides arcuate, the margin crenulate, hind angles well defined, obtuse; base arcuate with distinct marginal line; disc convex, with four very indistinct transverse ridges, the first entire, the others interrupted by a rather broad and deep median depression, surface otherwise granulate. Elytra as wide as the thorax, humeri distinct, not dentate, disc striate, striæ indistinctly punctured, the intervals flat with the inner side feebly crenate, each interval on the outer side with a row of very indistinct, elongate, flattened tubercles. Mesosternum opaque, densely punctured, not carinate between the coxæ. Metasternum smooth. Abdomen nearly smooth, a row of coarse punctures across the middle of each segment. Posterior femur elongate oval, an indistinct marginal line extending nearly the entire length, the tibia not stout, without oblique ridges, but with the usual triple series of acute tubercles, spurs slender, the tarsus three-fourths as long as tibia, the first joint elongate triangular. Length .14 inch; 3.5 mm.

This species has somewhat the facies of *Rhyssemus*, and is placed in the present genus from the form of the posterior tarsi. An examination of the maxillæ will be necessary to define its position with certainty, but with the material at hand that is not possible. The thoracic and elytral sculpture distinguish it from *quinqueplicatus*.

Occurs in the Middle States, Dacota and Texas, but rare.

**Ps. nanus** DeGeer.—Moderately elongate and convex, brownish, head and thorax often piceous, shining, legs pale. Head coarsely rugulose, slightly verrucose in front. Clypeus broadly triangularly emarginate, the angles each side obtuse, sides feebly arcuate, genæ obtuse. Thorax one-half wider than long, not narrower in front, the anterior angles obtuse, margin not crenate, sides feebly arcuate, hind angles very obtuse, base arcuate, the marginal line deep, disc convex, transverse impression at the front angles, another at middle of declivity, a slight median depression at base, surface with very coarse and deep, sparsely placed punctures, near the sides smooth. Elytra as wide at base as the thorax, humeri distinct, not dentate, disc deeply striate, striæ punctulate, intervals convex smooth, crenate on their inner borders. Mesosternum opaque, punctulate. Metasternum smooth. Abdomen almost entirely smooth, the segments crenate in front. Posterior femora smooth, the marginal line short, the tibiæ relatively slender, the anterior and posterior edges serrulate, the outer face smooth, spurs slender, subacute at tip, the tarsi as long as half the tibiæ, the first joint elongate triangular. Length .8-1.0 inch; 2-2.5 mm.

This species is certainly the smallest lamellicorn in our fauna, and Baron Harold says that it is probably the smallest known. Its occurrence in our fauna was first indicated by Harold (*Stett. Zeit.* 1867, p. 282), but specimens were not known to me at the time of my synopsis.

Appears to be widely distributed, Harold records it from Chili, Mexico and Cuba; in our country I have seen specimens from Massachusetts (Blanchard), Texas, Arizona, California and Michigan (Schwarz).



**Ps. cælatus** Lec.—Ovate, robust, broader behind, convex, piceous, shining; legs reddish brown. Antennæ pale. Head rather closely verrucose. Clypeus broadly triangularly emarginate, the angles each side obtuse, the sides arcuate, slightly sinuate before the genæ which are obtuse. Thorax fully twice as wide as long, not narrower in front, anterior angles obtuse, sides feebly arcuate, margin entire, hind angles obtuse, base arcuate, the marginal line rather deep, disc convex, a deep postapical groove, a second near the middle of the declivity extending upwards nearly to the median line of the thorax, the median line of thorax impressed posteriorly, the surface with very coarse deep punctures sparsely and irregularly placed, the sides quite smooth. Elytra oval, inflated, at base as wide as thorax, humeri rounded, disc deeply striate, striæ moderately closely punctured, intervals convex, smooth. Mesosternum opaque, scabrous. Metasternum short, smooth. Abdomen smooth, with an indistinct row of coarse punctures across each segment and a few, more distinct, at the sides. Posterior femora stout, oval, the marginal line distinct, a row of coarse setigerous punctures parallel with it, the tibiæ stout, smooth on the outer side, with two oblique ridges, the upper feeble, the lower well developed, the spurs cylindrical, but slender, obliquely truncate at tip, the tarsi short, the first joint elongate triangular. Length .12-.14 inch; 3-3.5 mm.

In a species like the present it is difficult to describe the thoracic sculpture in a manner to apply to even the majority of specimens. In a general way there are seen when viewed laterally two grooves, the first is immediately postapical and is entire, except for a short space at middle, the second groove is usually deeper and broader, extending from a short distance above the lateral margin toward the middle, but more widely interrupted than the first groove, the disc is thus divided into three unequal portions, the basal the broadest. The impression of the median line is also variable, the anterior portion is usually fine, the posterior filled with closely placed punctures.

The elytral striæ vary in punctuation in a manner suggestive of sexual difference, that is, some specimens are a little less inflated and have the striæ more distinctly punctured, others are more robust in form, the striæ rather finer and the punctures decidedly so. The body is apterous.

Occurs on the sea-shore near San Francisco, Cala.

**Ps. hydropticus** n. sp.—Ovate, much broader behind, convex, rufoferruginous, shining. Head coarsely and closely verrucose. Clypeus broadly and feebly triangularly emarginate, the angles on each side obtuse, sides arcuate, genæ scarcely prominent beyond the eyes. Thorax twice as wide as long, distinctly narrower in front, anterior angles obtuse, sides arcuate, the margin entire, hind angles broadly rounded, base arcuate, the marginal line entire, but fine and indistinct, disc convex, very shining, the surface somewhat irregular near the front angles, but without grooves, the upper portion of disc, sparsely punctate, the punctures coarse and indistinct. Elytra broadly oval, nearly as broad posteriorly as long, as broad at base as the thorax, humeri broadly rounded, disc striate.

striae deep and broad, indistinctly punctate at bottom, the lateral striae less distinct than the dorsal, intervals convex, smooth. Mesosternum feebly shining, the surface slightly scabrous. Metasternum short, body apterous, the sides alutaceous. Abdomen alutaceous, each segment with a transverse row of indistinct setigerous punctures. Posterior femur elongate oval, the marginal line indistinct, the tibiae stout, without oblique ridges, the outer edge with four spinules in two transverse pairs, the inner edge serrulate as usual, the spurs short, but acute at tip, the tarsus very short, the first four joints triangular. Length .10 inch; 2.5 mm.

This species and the preceding by their convex form and inflated elytra have far greater resemblance to *Aegialia* than to the other *Psammodyus*. They are both truly members of the present genus as shown by the entirely concealed labrum and mandibles.

The differences between *hydropicus* and *caelatus* are many, as will be seen in the description, the more striking are given in the synoptic table.

One specimen, Savannah, Ga.

The following species still remains unknown to us, and it is impossible to say whether it is a *Psammodyus* or *Aegialia*:

**Aphodius clypeatus** Say.—Black; elytra testaceous; clypeus covered with small tubercles.

Inhabits Northwest Territory.

Head black, convex, covered with very small, obtuse tubercles; edge a little elevated, piceous; tips hardly truncated; thorax with irregular, small, obtuse rugæ; anterior angles rectangular; posterior edge regularly arcuated, not dilated in the middle; elytra rufotestaceous, dusky at base; with deep, punctured striae; interstitial lines convex; thighs dull yellowish; posterior ones much dilated.

Length more than three-twentieths of an inch [4 mm.]. Readily distinguished by the rough appearance of the clypeus.

#### **ÆGIALIA** Latreille.

The mandibles and labrum are always distinctly visible beyond the clypeus. The head is nearly always verrucose, more obviously in the shorter and more ventricose species, less so in those of more elongate form.

Although the metasternum is short in the majority of the species the body is winged, generally very feebly.

The legs are stout and strongly fossorial, the anterior tibiae especially broad and with large external teeth. The tarsi are rather short and the claws small. As the species are arranged in the fol-

lowing table, the tarsi have greatest length in *rufescens* and gradually shorten to *spissipes*, this is also true of the terminal joint of the tarsus and the claws. In *crassa* and *spissipes* the last joint of the hind tarsus is very little longer than the fourth and the claws very small and slender.

The pygidium is usually entirely covered by the elytra, and there is no median groove such as has been remarked in *Atenius*.

The species are not numerous, but from present appearances our country has a greater number than all elsewhere known.

At the time of my synopsis (Trans. Am. Ent. Soc. 1871, p. 293) four species were enumerated, three have since been described by Dr. LeConte and two new ones added in the present paper, one remains unknown, although probably identical with *lacustris*.

The form of the posterior tibial spurs made the basis of the separation of species, the same plan was followed by Dr. LeConte (Proc. Am. Philos. Soc. 1878, p. 610). In the following table other characters have been used which place the species in a more natural relation and sequence, at the same time more easy to comprehend and more certain in the results obtained.

- Thorax with distinct basal marginal line..... 2.
- Thorax without basal marginal line..... 6.
- 2.—Spurs of hind tibiæ slender and usually long.....3.
- Spurs of hind tibiæ shorter, explanate at tip and with rather broad translucent border.....5.
- 3.—Form slender, elongate, parallel, rufous.....**rufescens.**
- Form robust, broader behind..... 4.
- 4.—Species of larger size .16-.22 inch ; 4-5.5 mm.
- Thorax coarsely punctured, rather closely even to the lateral margin.
- Elytral intervals irregularly biserially punctulate; lateral margin of thorax coarsely crenate, the median line posteriorly distinctly impressed.....**cylindrica.**
- Elytral intervals smooth; margin of thorax at most indistinctly crenate, median line not impressed..... **lacustris.**
- Thorax rather finely and sparsely punctured; near the sides, especially at the hind angles quite smooth, the lateral margin entire.
- Blanchardi.**
- Species of small size .08 inch ; 2 mm.....**pusilla.**
- 5.—Thorax coarsely sparsely punctured, smoother at sides, where the surface is somewhat irregular; intervals of elytra nearly flat..... **conferta.**
- 6.—Posterior tibiæ slender, that is much less than half as broad at apex as long on the posterior edge; elytral striae distinctly punctured.
- Thorax with coarse, sparse punctures everywhere, except a smooth space near the hind angles, a small lateral fovea only.....**latispinia.**
- Thorax rather closely and more finely punctured, smooth at sides, a rather large transverse fovea on the declivity.....**opifex.**

Posterior tibiæ stout, that is fully or more than half as broad at apex as long on the posterior border.

Posterior tibiæ with oblique ridges, the discal striæ not very distinctly punctured..... **crassa.**

Posterior tibiæ without oblique ridges, but with numerous asperities; striæ very distinctly punctured..... **spissipes.**

As all the species are fimbriate along the entire border with yellowish hair, a repetition of this in each of the following descriptions has been thought unnecessary.

**A. rufescens** (*rufa* || Lec.)—Elongate, parallel, feebly convex, ferruginous or reddish brown, moderately shining. Head feebly convex, coarsely punctured and scabrous, the frontal suture slightly impressed. Clypeus nearly semicircular in outline, subtruncate in front narrowly margined. Thorax a little wider than long, not narrowed at apex, sides feebly arcuate, lateral marginal subcrenate in front, serrate near the hind angles which are very obtuse, base arcuate, the marginal line distinct, disc feebly convex, with very coarse punctures rather closely placed, with finer punctures intermixed, a space near the hind angles with finer punctures only. Elytra as wide at base as the thorax, sides parallel, humeri slightly dentate, disc striate, striæ closely punctured, intervals slightly convex, smooth. Mesosternum opaque, alutaceous, obsolete punctate. Metasternum elongate, sparsely punctate. Abdomen alutaceous, sparsely punctate. Posterior tibiæ relatively slender, with two short oblique ridges, the spurs moderately long, rather slender, acute at tip. Length .18 inch; 4.5 mm.

This species is remarkable in its elongate, parallel form, not differing greatly in this respect from *Atænius abditus*. The color is always some modification of reddish brown.

The name *rufa* proposed by LeConte is preoccupied by Fabricius, and is therefore changed to *rufescens*.

Occurs at Marquette, Lake Superior, and in western Nevada.

**A. cylindrica** Esch.—Oblong oval, slightly broader behind, convex, piceous, shining, legs brownish. Antennæ and palpi rufotestaceous. Head moderately convex, coarsely and densely punctured, rugose in front. Clypeus semicircular, subtruncate in front. Thorax nearly twice as wide as long, slightly narrower in front, anterior angles acute, sides feebly arcuate, hind angles distinct, but obtuse; base arcuate, somewhat sinuate, the marginal line distinct, the entire lateral and basal margin serrate, disc moderately convex, a slight median depression posteriorly, a concavity near the front angles, a slight depression at middle of declivity, surface very coarsely closely punctate, a little finer near the apex. Elytra as wide at base as the thorax, slightly narrower behind, humeri distinct not dentate, surface deeply striate, striæ coarsely closely punctured, intervals slightly convex, subbiserially punctulate at middle, uniserially at the sides. Mesosternum opaque, coarsely punctured, subcarinate between the coxæ. Metasternum rather short, smooth. Abdomen indistinctly alutaceous, each segment with a transverse row of punctures. Posterior femur not broadly oval, tibiæ relatively slender with three oblique ridges, the spurs moderately long, acute at tip. Length .16-.20 inch; 4-5 mm.

According to Mannerheim (Bull. Mosc. 1853, iii, p. 220) this species varies in having the elytra reddish brown, or the whole surface of that color. A specimen in my cabinet from Washington Territory has the elytra reddish brown, the legs somewhat paler. The species is feebly winged, as are all our species, even the *ventricose crassa*. *Æ. sabuleti* is probably very closely related, but I have not seen any specimens of that species.

Occurs in Alaska and Washington Territory. Typical specimens from Mannerheim have been examined.

**Æ. lacustris** Lec.—Oblong, subcylindrical, convex, scarcely wider posteriorly, piceous, shining, legs brown. Antennæ and palpi rufotestaceous. Head moderately convex, coarsely not densely punctured, anteriorly verrucose. Clypeus semicircular, subtruncate and feebly emarginate at middle. Thorax nearly twice as wide as long, very slightly narrower in front, sides feebly arcuate, anterior angles subacute, posterior angles obtuse, but distinct; base arcuate, with distinct marginal line, the lateral margin and outer portion of base indistinctly crenulate, disc moderately convex, a flattening near the front angles, two small foveæ on the declivity, the surface coarsely, but not densely punctured, near the hind angles somewhat smoother. Elytra as wide at base as the thorax, humeri distinct, but obtuse; moderately deeply striate, striæ coarsely and closely punctured, intervals feebly convex, smooth. Mesosternum opaque, longitudinally strigose. Metasternum smooth. Abdomen moderately shining, each segment with a transverse row of punctures and others more numerous near the sides. Posterior femora moderately stout, the tibiæ relatively slender, obliquely tricarinate, the spurs rather slender and acute at tip. Length .18-.22 inch; 4.5-5.5 mm.

Varies in color in a manner similar to *cylindrica*. Closely allied to the species named, but with the margin of thorax less serrate, the median line not impressed posteriorly and the elytral intervals smooth. The two foveæ mentioned in the description are at the middle of the declivous part of the sides, placed one above the other, the upper one longer.

Occurs in the Lake Superior region also at Garland, Colorado.

Closely allied to *lacustris*, and possibly synonymous with it is a species from Alaska described by Mannerheim in the following manner:

*Ægialia exarata*: oblonga, modice convexa, subcylindrica, supra piceo-castanea, subtus rufescens; clypeo apice emarginato, margine rufo, crebre ruguloso; vertice subtiliter punctulato; thorace transverso, lateribus rotundato, ciliato, angulis anticis vix productis, rotundatis, disco punctis paucis majoribus irregulariter sparsis, versus latera magis congestis; elytris striis profunde exaratis, in fundo leviter crenulatis, interstitiis lævibus, humeris dente minuto acutiusculo armatis. Longit. 2.33 lin. Latit. 1 lin.

Habitat in insula Sitkha.

**E. Blanchardi** n. sp.—Oblong, slightly broader behind, convex, piceous black, very shining, tarsi paler. Antennæ and palpi rufotestaceous. Occiput nearly entirely smooth, front and clypeus verrucose. Clypeus broadly feebly emarginate at middle, sides arcuate, a slight sinuation at the end of frontal suture, the margin narrowly reflexed. Thorax less than twice as wide as long, narrower in front, anterior angles acute, sides moderately arcuate, hind angles broadly rounded, base feebly arcuate, the marginal line entire, lateral and basal margins of thorax entire, not serrulate, disc convex, a slight flattening in the front angles, a small fovea at middle of declivity, the median line very indistinctly impressed posteriorly, surface finely sparsely punctured, smoother in front, nearly entirely smooth at sides. Elytra as wide at base as the thorax, slightly broader behind, humeri distinct, not dentate, disc convex, striae deep, crenately not coarsely punctured, intervals nearly flat, with very minute sparse punctures. Mesosternum opaque, alutaceous and sparsely punctate, finely carinate between the coxæ. Metasternum finely scabrous. Abdomen alutaceous, each segment with a transverse row of punctures. Posterior femora not unusually stout, a row of setigerous punctures near the knee, the tibia slender, the oblique ridges interrupted forming acute tubercles, the spurs slender and acute at tip. Length .16-.18 inch; 4-4.5 mm.

This species is similar in form to *cylindrica* and *lucustris*, but is a little more robust in facies. The punctures of the thorax are actually finer than in any other species in our fauna. From either of the two preceding species it may be known by the fine punctuation and by the sides of the thorax nearly smooth.

Occasionally varieties occur with the suture and lateral margin of the elytra near the apex reddish brown.

I take great pleasure in testifying my appreciation of his services to science and his many kind favors to me, by naming the species in compliment to Mr. Fred. Blanchard, of Lowell, Mass.

Collected at Lowell, Mass.; others in my cabinet are marked North Carolina.

**E. pusilla** n. sp.—Oblong oval, slightly broader behind, convex, piceous, legs, metasternum and inflexed sides of pronotum rufotestaceous. Antennæ pale, club darker. Clypeus subtruncate, the margin very narrowly reflexed. Front sparsely punctate and alutaceous. Thorax about one-fourth wider than long, base and apex equal, sides (seen above) feebly arcuate, margin not serrulate, anterior angles subacute, hind angles broadly rounded, basal marginal line distinct, disc convex, sparsely, but very regularly punctate, a smooth median line. Elytra not wider at base than the thorax, humeri very distinct, sides feebly arcuate, disc deeply striate, striae rather coarsely punctured, intervals convex with a single series of punctures, those of the sutural interval closely placed. Mesosternum rather smooth posteriorly, alutaceous in front. Metasternum smooth, with very fine punctures near the sides. Abdomen obsoletely coarsely punctate at the sides, last segment paler and more shining, the others opaque. Posterior femora not very stout, with scattered punctures, the posterior tibiæ slender, without oblique ridges, the spurs slender. Length .08 inch; 2 mm.

The punctures of the intervals near the sides and apex bear very short yellowish hairs, and it is probable that those of the disc are similarly provided in recent specimens. This species resembles *Psammodius nanus* in form, but is even more robust and convex. It is even smaller than any of the specimens of that species seen by me from our fauna, and is therefore the smallest Scarabæide known to me.

Occurs in Washington Territory; one specimen kindly given me by Mr. L. E. Ricksecker.

***E. conferta*** Horn.—Oblong, slightly broader behind, convex, piceous black, elytra sometimes reddish brown. Antennæ rufotestaceous. Head coarsely and rather closely verrucose. Clypeus subtruncate and very feebly emarginate at middle, on each side arcuate, the margin narrowly reflexed. Thorax twice as wide as long, narrower in front, anterior angles not acute in front, sides moderately arcuate, hind angles very obtuse, base arcuate, marginal line distinct, lateral and basal margins not crenate, disc convex, a slight depression at the front angles, a fovea at middle of declivity, median line very vaguely impressed posteriorly, surface sparsely irregularly punctate, a smooth space at the hind angles. Elytra as wide at base as the thorax, slightly broader behind, humeri obtuse, the striæ moderately deep, the punctures moderately fine and not crenate, intervals flat, smooth. Mesosternum opaque, punctate, not carinate between the coxæ. Metasternum slightly rugose at sides. Abdomen with few, coarse, irregularly placed punctures. Posterior femora oval, a row of setigerous punctures near the knee, the tibiæ stout, the outer edge muricate and with two indistinct oblique ridges, the spurs short, broadly expanded, obtuse at tip, the margins translucent. Length .14-.18 inch; 3.5-4.5 mm.

This species varies in the manner indicated for *cylindrica*. The posterior tibiæ are much stouter than the species which precede, but less so than *crassa*, the apex being less in length than half the length of the outer side of the tibia. The sculpture of thorax approaches more nearly to *Blanchardi*, but the form of the hind tibia and its spurs will readily distinguish it from this.

Seems to be more widely diffused than any of the other species. Specimens in my cabinet are from Illinois and Washington Territory; others in the LeConte cabinet from Georgia.

***E. latispina*** Lec.—Oblong oval, moderately robust, a little broader behind, piceous, shining, legs brownish. Antennæ and palpi pale. Head coarsely and closely verrucose. Clypeus subtruncate, the margin narrowly reflexed, the sides arcuate with a slight notch at end of frontal suture, genæ more distinct than usual. Thorax nearly twice as wide as long, narrower in front, the front angles not prominent anteriorly, sides arcuate, the margin not crenate, hind angles obtusely rounded, the base arcuate, without basal marginal line, disc convex, a slight depression at front angles, a fovea at middle of declivity, disc coarsely rather sparsely punctured, a smooth space at hind angles. Elytra as wide at base

as thorax, slightly broader behind, humeri distinct, but obtuse; surface, the striae deep, punctures moderately coarse and close, but not deeply impressed, intervals flat, smooth. Mesosternum opaque, punctate, not carinate between the coxæ. Metasternum smooth. Abdomen very indistinctly punctate. Posterior femora stout, with a row of coarse setigerous punctures near the knee, the tibiæ moderately stout, with two feeble oblique ridges, the spurs slender at base, dilated at apex with translucent borders. Length .16 inch; 4 mm.

This species has very much the facies of the larger species which precede, but differs especially in the absence of the basal marginal line of the thorax and the stouter tibiæ and spurs. The genæ are more distinctly prominent than in any other species of the genus. It is a larger species than *opifex*, and with a more coarsely and less closely punctured thorax.

Occurs in southern California. LeConte says in Mojave Desert, but as the specimens were collected by Morrison this is unlikely.

***A. opifex*** n. sp.—Oblong oval, broader behind, convex, piceous black, shining, legs brownish. Antennæ rufotestaceous. Head rather closely verrucose. Clypeus subtruncate and feebly emarginate, the sides arcuate, margin narrowly reflexed. Thorax twice as wide as long, narrower in front, anterior angles not prominent anteriorly, sides moderately arcuate, the margin not crenate, hind angles very obtuse, base arcuate, slightly sinuate each side of middle, the marginal line absent, disc convex, a slight depression at front angles, a transverse fovea at the middle of declivity, surface moderately closely and relatively coarsely punctate, smoother along the base and apex, a large smooth space at hind angles. Elytra as wide at base as the thorax, broader behind, humeri obtuse, striae deep, coarsely moderately closely punctate, intervals slightly convex, smooth. Mesosternum opaque, sparsely punctate, not carinate between the coxæ. Metasternum slightly scabrous at sides. Abdomen irregularly coarsely punctate. Posterior femora moderately stout, a row of setigerous punctures near the knee, the tibia rather slender, the oblique ridges formed of acute tubercles, the space between quite smooth, the spurs slender at base, broadly dilated externally, the edges translucent. Length .14 inch; 3.5 mm.

At present this is the smallest species known in our fauna. It is a little more ventricose than the preceding species. The posterior tibiæ are not more stout than in *Blanchardi*, and are called "rather slender" in the above description in comparison with *crassa* and *spis-sipes*. The only species from which there might be any difficulty in separating the present is *latispina*, but the smaller size and thoracic sculpture will be at once evident.

Collected abundantly at Lowell, Mass., by Mr. Fred. Blanchard.

***A. crassa*** Lec.—Ovate, rather ventricose and convex, piceous black, shining. Antennæ pale. Head closely verrucose. Clypeus subtruncate, the margin very narrowly reflexed. Thorax nearly twice as wide as long, narrower in front, sides feebly arcuate, anterior angles not prominent, lateral margin not serrate, hind



angles obtusely rectangular, base feebly arcuate, the marginal line wanting, disc convex, a postapical transverse impression at front angles, a small fovea at middle of declivity, surface coarsely not closely punctate, the sides absolutely smooth. Elytra as broad at base as the thorax, broader behind, humeri distinct, but obtuse, striæ not deep, the punctures rather small and not close, intervals flat, smooth. Mesosternum opaque, finely alutaceous, not carinate between the coxæ. Metasternum slightly rugose at sides. Abdomen indistinctly punctate. Posterior femora stout with coarse, setigerous punctures near the knee, the tibiæ very stout, the outer face with three oblique ridges, the upper two composed of tubercles, the lower prominent, spurs rather slender, but explanate toward end and translucent at sides. Length .14-.20 inch; 3.5-5 mm.

While the usual color is piceous black, specimens occur with the elytra brownish or even quite red. The hind tibiæ are very broad, although rather flat, the apex is fully half the length of the shorter edge. The punctuation of the elytral striæ seems variable, and in many specimens the punctures are quite indistinct. This species will be recognized as the most ventricose and massive among those in our fauna.

Occurs abundantly on the sea-coast of California south of San Francisco.

***Æ. spissipes*** Lec.—Oblong, subcylindrical, rufotestaceous, moderately shining. Antennæ pale. Head convex, rather coarsely granulate and rugose. Clypeus with narrow reflexed border, subtruncate in front, sides arcuate, a slight notch at the suture, genæ not more prominent than the eyes. Thorax not quite twice as wide as long, sides feebly arcuate, apex and base equal, hind angles rounded, base arcuate, without distinct marginal line, disc moderately convex, indistinctly rugoso-punctate. Elytra as wide at base as the thorax, humeri distinct, but obtuse, surface deeply striate, striæ indistinctly punctate, intervals flat, the surface somewhat irregular. Mesosternum alutaceous. Metasternum at sides alutaceous, shining, a few scattered fine punctures. Abdomen coarsely deeply and sparsely punctured. Anterior tibiæ with two large teeth and a much smaller one, above not crenate. Posterior femora oval, sparsely punctate, the tibia stout, as broad at apex as half the length, the outer side without transverse carinæ, but with acute granules arranged in longitudinal series, the tibial spurs short, stout and somewhat expanded at tip. Length .16-.18 inch; 4-4.5 mm.

Of this species three specimens have been seen, the type from Marquette, Mich., agrees entirely with the above description, two others from Lowell, Mass., are more slender, the clypeus more obviously truncate and the abdomen with fewer punctures. The characters are possibly merely variations or sexual, but more specimens must be studied before this can be determined.

Marquette, Mich. (Schwarz), Lowell, Mass. (Blanchard).

## Bibliography and Synonymy.

**APHODIUS** Illig.

## Subgenus TEUCHESTES Muls.

- A. fossor* Linn., Syst. Nat. ed. x, p. 348; Erich., Ins. Deutsch. iii, p. 799.

## Subgenus DIAPTERNA Horn.

- A. validus* Horn, Trans. Am. Ent. Soc. 1870, p. 112.  
*A. hamatus* Say, Long's Exped. ii, p. 277; edit. Lec. i, p. 183.  
*concevus* † Hald., Jour. Acad. 1848, p. 103.  
*pinguis* Hald., loc. cit.  
*angularis, hyperboreus, omissus* Lec., Agass. Lake Superior, p. 225.  
*torpidus* Horn, Trans. Am. Ent. Soc. 1870, p. 114.  
*occidentalis* Horn (var.), loc. cit. p. 114.  
*sagittarius* Harold, Ann. Fr. 1860, p. 615.

## Subgenus COLOPTERUS Muls.

- A. erraticus* Linn., Syst. Nat. ed. x, p. 345; Erichs., Ins. Deutsch. iii, p. 794.  
*pensvallensis* Mels., Proc. Acad. ii, p. 135.

Subgenus APHODIUS *auct.*Group **A.**

- A. denticulatus* Hald., Jour. Acad. 1848, p. 104; Horn, Trans. Am. Ent. Soc. 1870, p. 116.  
*A. conspersus* n. sp.

Group **B.**

- A. crassulus* Horn, Trans. Am. Ent. Soc. 1870, p. 118.  
*A. bidens* Lec., U. S. Geol. Surv. Hayden, 1878, Bull. iv, 2, p. 453.  
*A. fimetarius* Linn., Syst. Nat. ed. p. 348; Erichs., Ins. Deutsch. iii, p. 805.  
*nodifrons* Rand., Bost. Jour. ii, p. 20.  
*A. congregatus* Mann., Bull. Mosc. 1853, iii, p. 219; Harold, Berl. Zeit. 1863, p. 362; Horn, loc. cit. p. 119.  
*arcticus* Harold, loc. cit. p. 361 (variety).  
*A. aleutus* Esch., Entomogr. i, 1822, p. 27; Harold, loc. cit. p. 372.  
*ursinus* Motsch., Bull. Mosc. 1845, iv, 365, pl. 6, fig. 6; Mann., Bull. Mosc. 1853, iii, p. 218; Harold, loc. cit. p. 386; Horn, loc. cit. p. 118.  
*A. foetidus* Fab., Ent. Syst. i, p. 40; Harold, loc. cit. p. 364.  
*tenellus* Say, Jour. Acad. iii, p. 213.  
*A. duplex* Lec., U. S. Geol. Surv. loc. cit. p. 454.  
*A. pectoralis* Lec., Pacif. R. R. Rep. 47 par., App. i, p. 41; Horn, loc. cit. p. 120.  
*A. ruricola* Mels., Proc. Acad. ii, p. 136; Harold, loc. cit. p. 373; Horn, loc. cit. p. 118.  
*curtus* Hald, Journ. Acad. 1848, p. 105.  
*aurelianus* Harold, loc. cit. p. 375.  
*A. anthracinus* Lec., U. S. Geol. Surv. loc. cit. p. 455.

## Group C.

- A. granarius* Linn., Syst. Nat. 1, ii. p. 547; Harold, loc. cit. p. 347.  
*aterrimus* Mels., Proc. Acad. ii. p. 136; Hald., loc. cit. p. 106.  
*metallicus, spretus* Hald., loc. cit. pp. 105-106.

*A. vittatus* Say, Jour. Acad. v, p. 191; Harold, loc. cit. p. 355; Horn, loc. cit. p. 120.

*A. guttatus* Esch., Mem. Mosc. 1823, p. 97; Mann., Bull. Mosc. 1843, ii, p. 261; Harold, Berl. Zeitsch. 1863, p. 352.

## Group D.

*A. lividus* Oliv., Ent. 1, 3, p. 86, pl. 26, fig. 222; Erichs., Ins. Deutsch. iii, p. 837.

*A. vestiarius* Horn, Trans. Am. Ent. Soc. 1870, p. 121.

## Group E.

*A. rugifrons* Horn, Trans. Am. Ent. Soc. 1871, p. 295.

## Group F.

*A. obtusus* Lec., U. S. Geol. Surv. loc. cit. p. 454.

*A. consociatus* n. sp.

*A. subæneus* Lec., Pacif. R. R. Rep. 47 par., App. 1, 41; Horn, Trans. Am. Ent. Soc. 1870, p. 129.

*A. alternatus* Horn, loc. cit. p. 129.

## Group G.

*A. nevadensis* Horn, loc. cit. p. 121.

*A. gentilis* n. sp.

*A. cribratus* Lec., U. S. Geol. Surv. loc. cit. p. 455.

## Group H.

*A. opacus* Lec., Col. Hefte x, 1872, p. 193.

*A. lutulentus* Hald., Proc. Acad. 1842, p. 304; Jour. Acad. 1848, p. 104; Horn, loc. cit. p. 124; Harold, Berl. Zeitsch. 1873, p. 196.

*corvinus* Hald., ♂, Jour. Acad. 1848, p. 104.

*A. stupidus* Horn, loc. cit. p. 125; Harold, loc. cit. p. 204.

*A. lentus* Horn, loc. cit. p. 125.

*A. decipiens* n. sp.

## Group I.

*A. explanatus* Lec., U. S. Geol. Surv. loc. cit. p. 457.

*A. rudis* Lec., U. S. Geol. Surv. loc. cit. p. 458.

*A. phæopterus* Lec., U. S. Geol. Surv. loc. cit. p. 456.

*A. brevicollis* Lec., U. S. Geol. Surv. loc. cit. p. 455.

*A. marginatus* Lec., U. S. Geol. Surv. loc. cit. p. 456.

*A. ochreipennis* Horn, Trans. Am. Ent. Soc. 1871, p. 295.

*A. Haldemani* (*politus* ||) Horn, Trans. Am. Ent. Soc. 1870, p. 128.

*A. rubeolus* Beauv., Ins. Af. et Amer. p. 90, pl. 2, fig. 4; Horn, loc. cit. p. 126.

*copronymus* Mels., Proc. Acad. 1844, p. 136.

*A. stercorosus* Mels., Proc. Acad. 1844, p. 136; Horn, loc. cit. p. 127.

*A. concavus* Say, Jour. Acad. 1823, p. 214; Horn, loc. cit. p. 128.

*lævigatus* Hald., Jour. Acad. 1848, p. 103.

- A. rubidus* Lec., Pacif. R. R. Rep. 47 par., App. 1, p. 41.  
*A. militaris* Lec., Proc. Acad. 1858, p. 65; Horn, loc. cit. p. 127.  
*A. æmulus* n. sp.  
*A. rubiginosus* Horn, loc. cit. p. 127.  
*A. consentaneus* Lec., Agass. Lake Superior, p. 255; Horn, loc. cit. p. 128.  
*A. luteolus* n. sp.  
*A. phalerioides* Horn, loc. cit. p. 131.  
*A. Larreæ* n. sp.  
*A. parvus* n. sp.  
*A. ægrotus* Horn, loc. cit. p. 127.  
*A. dentiger* Lec., Proc. Acad. 1858, p. 65; Horn, loc. cit. p. 130.  
*A. coloradensis* Horn, loc. cit. p. 130.  
*A. bicolor* Say, Jour. Acad. 1823, p. 212; Horn, loc. cit. p. 130.  
*A. luxatus* n. sp.  
*A. serval* Say, Bost. Jour. 1837, p. 167; Horn, loc. cit. p. 122.  
     *Steinheili* Harold, Col. Hefte v, p. 100.  
*A. inquinatus* Herbst, Füssl. Arch. 1784, v, 2, p. 6. pl. 19, fig. 5; Erichs., Ins. Deutsch. iii, p. 839.  
     *maculipennis* Mels., Proc. Acad. 1844, p. 137.  
*A. pardalis* Lec., Pacif. R. R. Rep. 47 par., App. i, 41; Horn, loc. cit. p. 123.  
*A. leopardus* Horn, loc. cit. p. 124.  
*A. inutilis* n. sp.  
*A. pumilus* n. sp.  
*A. terminalis* Say, Jour. Acad. 1823, p. 213; Horn, loc. cit. p. 129.  
*A. cruentatus* Lec., U. S. Geol. Surv. loc. cit. p. 456.  
*A. rufipes* Linn., Faun. Suec. p. 139; Erichs., Ins. Deutsch. iii, p. 892.  
*A. depressus* Kug., Schneid. Mag. iii, p. 262; Erichs., loc. cit. p. 896; Harold, Ann. Fr. 1862, p. 301.

#### Group **K**.

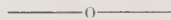
- A. scabriceps* Lec., U. S. Geol. Surv. loc. cit. p. 457.  
*A. nanus* n. sp.  
*A. acerbus* n. sp.

#### Group **L**.

- A. rubripennis* Horn, Trans. Am. Ent. Soc. 1870, p. 132.  
*A. subtruncatus* Lec., U. S. Geol. Surv. loc. cit. p. 457.  
*A. Walshii* Horn, loc. cit. p. 132.  
*A. femoralis* Say, Jour. Acad. 1823, p. 215; Horn, loc. cit. p. 131.  
*A. prodromus* Brahm, Ins. Kal. 1790, i, p. 3; Erichs., loc. cit. p. 871.  
*A. tenuistriatus* n. sp.

#### Group **M**.

- A. oblongus* Say, Jour. Acad. 1823, p. 215; Horn, loc. cit. p. 132.  
     *badipes* Mels., Proc. Acad. 1844, p. 135.  
*A. sparsus* Lec., U. S. Geol. Surv. loc. cit. p. 458.  
*A. ovipennis* Horn, Trans. Am. Ent. Soc. 1870, p. 133.  
*A. humeralis* Lec., U. S. Geol. Surv. loc. cit. p. 458.



- A. cadaverinus* Mann., Bull. Mosc. 1843, ii, p. 261 (unknown to me).

**OXYOMUS** Cast.

**O. porcatus** Fab., Syst. Ent. p. 20; Erichs., Ins. Deutsch. iii. p. 906; Duval. Gen. Col. Eur. iii. pl. 7, fig. 33.

*opacifrons* Horn, Trans. Am. Ent. Soc. 1871, p. 284.

**DIALYTES** Harold.

**D. truncatus** Mels. (*Aphodius*), Proc. Acad. ii. p. 135; Horn, Trans. Am. Ent. Soc. 1870, p. 133.

*corvinus* Hald., Jour. Acad. 1848, p. 104.

**D. Ulkei** Horn, Trans. Am. Ent. Soc. 1875, p. 141.

**D. striatulus** Say (*Trox*), Jour. Acad. v. p. 172; edit. Lec. ii. p. 295; Horn, Trans. Am. Ent. Soc. 1870, p. 134.

*cribrosus* Lec., Agass. Lake Superior, p. 225.

**ATENIUS** Harold.

**A. insculptus** n. sp.

*sculptilis* † Lec., Proc. Am. Philos. Soc. 1878, p. 402.

**A. cylindrus** Horn, Trans. Am. Ent. Soc. 1871, p. 289.

*Hornii* Harold, Col. Hefte xii, 1874, p. 19.

**A. Lecontei** Harold, Col. Hefte xii, 1874, p. 20.

**A. lucanus** Horn, Trans. Am. Ent. Soc. 1871, p. 288.

**A. abditus** Hald. (*Aphodius*), Jour. Acad. 1848, p. 106; Horn, Trans. Am. Ent. Soc. 1871, p. 289.

*attenuator* Harold, Col. Hefte xii, 1874, p. 22.

**A. texanus** Harold, Col. Hefte xii, 1874, p. 23.

**A. desertus** Horn, Trans. Am. Ent. Soc. 1871, p. 289.

**A. inops** n. sp.

**A. læviventris** n. sp.

**A. imbricatus** Mels. (*Aphodius*), Proc. Acad. 1844, p. 136; Horn, Trans. Am. Ent. Soc. 1871, p. 285.

*sordidus* Harold, Col. Hefte v, p. 103.

**A. alternatus** Mels. (*Oxyomus*), Proc. Acad. 1844, p. 147; Horn, Trans. Am. Ent. Soc. 1871, p. 285.

**A. socialis** Horn, Trans. Am. Ent. Soc. 1871, p. 287.

*socialis* Harold, Berl. Zeitschr. 1874, p. 174.

**A. puncticollis** Lec., Proc. Acad. 1868, p. 66.

**A. Wenzelii** n. sp.

**A. ovatulus** Horn, Trans. Am. Ent. Soc. 1871, p. 286.

**A. gracilis** Mels. (*Oxyomus*), Proc. Acad. 1844, p. 137; Harold, Berl. Zeitschr. 1867, p. 281; Horn, Trans. Am. Ent. Soc. 1871, p. 286.

**A. figurator** Harold, Ent. Hefte xii, 1874, p. 24.

**A. robustus** Horn, Trans. Am. Ent. Soc. 1871, p. 285.

**A. oblongus** Horn, Trans. Am. Ent. Soc. 1871, p. 286.

**A. inquisitus** n. sp.

**A. strigatus** Say (*Aphodius*), Jour. Acad. iii, 1823, p. 212; Say's Works, ed. Lec. ii, p. 137.

*spretulus* Hald., Jour. Acad. 1848, p. 106.

**A. stercorator** Fab. (*Aphodius*), Spec. Ins. i. p. 22; Oliv. Ent. I, 3, p. 89, pl. 17, fig. 155 (synonymy omitted).

**A. cognatus** Lec. (*Euparia*), Proc. Acad. 1858, p. 65.

**A. californicus** n. sp.

*A. lobatus* Horn, Trans. Am. Ent. Soc. 1871, p. 287.

*A. hirsutus* Horn, Trans. Am. Ent. Soc. 1871, p. 288.

### **EUPARIA** Serv.

*E. castanea* Serv., Enc. Méth. Ins. p. 357; Westw., Trans. Ent. Soc. Lond. iv, p. 239, pl. 17, fig. 3; Horn, Trans. Am. Ent. Soc. 1871, p. 289.

### **RHYSSEMUS** Muls.

*Rh. scaber* Hald., Jour. Acad. 1848, p. 107; Horn, Trans. Am. Ent. Soc. 1871, p. 290.

*Rh. californicus* Horn, Trans. Am. Ent. Soc. 1871, p. 290.

*Rh. sonatus* Lec., Trans. Kans. Acad. Sc. x, 1881, p. 77.

*Rh. riparius* Horn, Trans. Am. Ent. Soc. 1871, p. 290.

*calutus* Lec., Trans. Kans. Acad. Sc. x, 1881, p. 77.

### **PLEUROPHORUS** Muls.

*P. cæsus* Panz., Faun. Germ. 35, 2; Erich., Ins. Deutsch. iii, p. 913; Horn, Trans. Am. Ent. Soc. 1871, p. 291.

*P. ventralis* n. sp.

### **PSAMMODIUS** Serv.

*Ps. bidens* Horn, Trans. Am. Ent. Soc. 1871, p. 293.

*Ps. ægialioides* Hald., Jour. Acad. 1848, p. 107; Horn, Trans. Am. Ent. Soc. 1871, p. 292.

*Ps. quinqueplicatus* Horn, Trans. Am. Ent. Soc. 1871, p. 292.

*Ps. interruptus* Say, Bost. Jour. 1, p. 178; edit. Lec. ii, p. 651; Horn, Trans. Am. Ent. Soc. 1871, p. 292.

*Ps. nanus* DeGeer (*Scarabæus*), Mem. Ins. iv, p. 318; Harold, Stett. Zeit. 1867, p. 282.

*parvulus* Chev., Ann. Fr. 1864, p. 415.

*Ps. cælatus* Lec. (*Ægialia*), Pacif. R. R. Rep. 1857, App. i, p. 42; Horn, Trans. Am. Ent. Soc. 1871, p. 292.

*Ps. hydropticus* n. sp.

*Ps. ? clypeatus* Say (*Aphodius*), Long's Second Exped. p. 228; edit. Lec. i, p. 183 (unknown to me).

### **ÆGIALIA** Latr.

*Æ. rufescens* Horn, ante.

*rufa* || Lec., Proc. Amer. Philos. Soc. 1878, p. 610.

*Æ. cylindrica* Esch. (*Psammodius*), Entomogr. i, p. 11; Manu. (*Oxyomus*), Bull. Mosc. 1843, ii, p. 262; idem. 1853, iii, p. 220; Horn, Trans. 1871, p. 293.

*Æ. lacustris* Lec., Agass. Lake Superior, 1850, p. 225; Horn, Trans. Am. Ent. Soc. 1871, p. 293.

*? exarata* Mann., Bull. Mosc. 1853, iii, p. 219.

*Æ. Blanchardi* n. sp.

*Æ. pusilla* n. sp.

*Æ. conferta* Horn, Trans. Am. Ent. Soc. 1871, p. 294.

*Æ. latispina* Lec., Proc. Amer. Philos. Soc. 1878, p. 611.

*Æ. opifex* n. sp.

*Æ. crassa* Lec., Pacif. R. R. Rep. 1857, App. 1, p. 42; Horn, Trans. Am. Ent. Soc. 1871, p. 294.

*Æ. spissipes* Lec., Proc. Amer. Philos. Soc. 1878, p. 611.